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Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

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(A CASE HISTORY)*

A southern telephone company is well pleased with the way Ankoseal came through an ordeal of lightning and bullets. There was plenty of lightning during the summer of 1953. Many direct strikes, but in no case were the Ankoseal cable lines damaged. The only repair job was removing eight shotgun pellets from the jacket of a cable which was done "quickly and easily".

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*Letter on file at Ansonia

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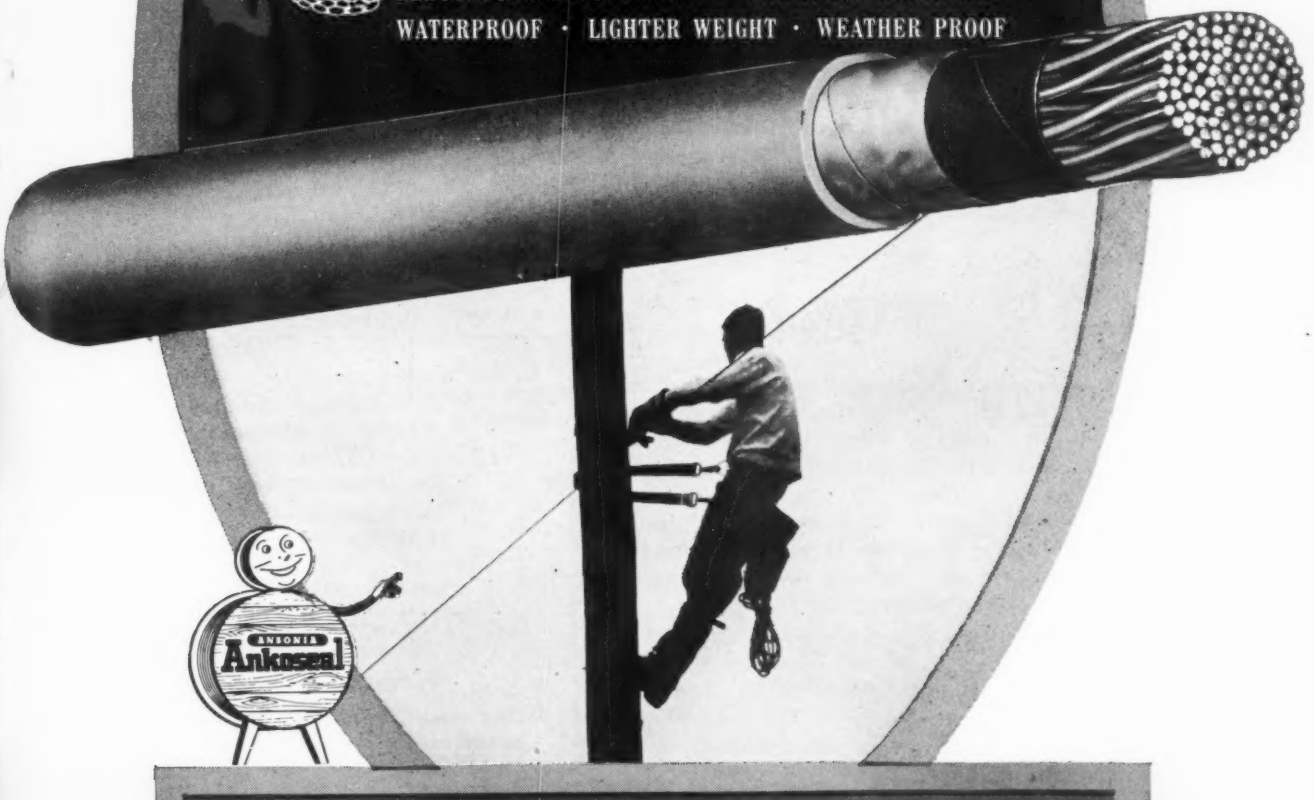

THE ANSONIA WIRE & CABLE COMPANY

ANSONIA, CONNECTICUT

FLASHES AND PLUGS

DIAL C FOR MURDER. A man in San Francisco Cal., telephoned a woman in Los Angeles and identified himself as "Charley the Killer." Naturally, the woman called the police.

The call was traced to a man in a Bay City hotel.

San Francisco police questioned him about the call. He said the operator gave him a wrong number, but he admitted the terror-producing identification.

"You see, at home everybody knows me as 'Charley the Killer.' I run a termite-exterminating company."

• • •

ITOKAWA-RY LONG TIME. In Tokyo, Japan, a picture in the *Nippon Times* recently showed Shozo Itokawa, proprietor of a haberdashery shop, grinning broadly and holding a congratulatory bouquet.

Tokyo's 300,000th telephone had just been installed in his store. And Shozo had waited seven years for it.

• • •

HANDY WITH TOOLS. From Omaha, Neb., comes the story of a telephone repair man who wouldn't be kept out.

He had answered a trouble call from a private residence.

The owners hadn't expected him so quickly and, being upstairs, they didn't hear the front doorbell ring nor the knocks at the back door.

How to get in? The repair man hooked his test telephone onto the line and called up the people to let him in.

• • •

NOCTURNE. A Dallas, Tex., businesswoman was sound asleep when the telephone rang. She was still groggy when a man's voice checked on her name.

"This is the Southwestern Bell Telephone Co.," he announced. "We're going to blow out the lines. They get clogged up with dirt and soot and we have to do it every so often. It would be best if you would put a paper sack over the telephone to protect your furniture."

"Do you have to do this at this time of night?" she protested.

He patiently explained that the lines were busy all day. She had gone to the kitchen for a paper sack and had it half way on the telephone before her mind clicked awake.

• • •

PRECOCIOUS POOCH. An Atlanta, Ga., woman has a dog who practically answers the telephone for her.

She leaves the pooch in the house when she's working in the yard.

When the telephone rings, the dog lifts the handset off the hook and gives his mistress time to get inside before the caller gives up.

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by FRANCIS X. WELCH WASHINGTON EDITOR

New York Commission opposes New York City's move to block trying of Bell company's rate case on statewide basis. Court rules against FCC hearing on allegation that a broadcaster was once a communist. CIO spokesman views on public ownership of utilities clash.

THE NEW YORK Telephone Co. rate case being heard before the New York Public Service Commission at Albany is living up to advance billing as a very important, as well as the largest, postwar public utility rate increase proceedings. Although the case is nowhere near final decision on the company's request for a $68,850,000 a year rate increase, already a noteworthy ruling has come from the commission as a whole. The commission rejected as "grossly misleading" a comparison made by the city of New York of the New York Telephone Co.'s earning with figures which the city cited as actual returns.

Four members of the five-man commission unanimously upheld Commissioner Spencer B. Eddy's decision (as hearing examiner) that the figures presented by the city's attorneys were not comparable with what the commission described as the actual return. Commissioner Eddy said that the New York City figures—to which both the commission and the New York Telephone Co. attorneys objected, when offered as an exhibit—failed to take into account about 2 million dollars annual pension costs. For this reason, Commissioner Eddy felt that the picture painted by the city's exhibit was greatly distorted and, therefore, carried "no evidentiary weight."

These figures by the city attempted to show that telephone company earnings since 1950 had run well above 6 per cent on investment. If that were true, present rates would be adequate in the light of previous New York commission decisions which upheld earnings of 5½ per cent to 6 per cent as being adequate. Such was the line of argument taken by the New York assistant corporation counsel, Leo K. Larkin.

The commission's ruling is important in the light of a previous attempt by New York City to isolate the company's earnings within the city area from those in the rest of the state. That suggestion was opposed not only by the New York Telephone Co. but also by representatives of the "upstate" cities of Buffalo, Syracuse, and the suburban city of Yonkers.

The New York City argument would have the commission reject the company's tradition of more than 30 years of fixing rates on a statewide basis. It is a tradition which the New York Public Service Commission has approved during that period. But the New York city attorneys contend that the telephone company had a bigger rate of return in New York City than elsewhere and, therefore, the statewide rate basis discriminated against New York City subscribers through failure to segregate rates, earnings, expenses, etc., allocable to the city's operations. The company had always contended that such a separation of plant and operations would be impracticable and unsound.

Commissioner Eddy criticized the city attorneys for delaying for more than two years in carrying to the New York Court of Appeals a case in which statewide rate-fixing was an issue. The city's engineering expert, Manfred K. Toeppen (who is a former member of the FCC's staff and now a private consulting engineer), trid to compare the cost of operation within the city to the company's operation elsewhere in the state. One of his exhibits attempted to show what it would cost the company on the basis of "time and distance" to handle local calls. He applied the so-called "minute-mile measurement" used by the company in measuring long distance calls against local calls in the company's 10-exchange groupings throughout the state.

Pension Accounting Changes

The attack made by New York City on the New York Telephone Co.'s pension practices lends significance to the recent action of the FCC in adopting a proposed amendment to its accounting rules for Class A and Class B telephone companies. It also applies to telegraph and cable companies, subject to FCC accounting regulations. This rule deals with pension costs based on service by employes rendered prior to the period for which accruals are made.

As revised, the FCC rule permits telephone companies—subject to FCC jurisdiction—to classify as current operating expenses the amounts set aside to cover actuarial liabilities (arising under their pension plan) which were not funded for the full period covered by the service liability. In other words, the rule provides for the inclusion, in the pension account, of reasonable amounts to provide for pension costs based on service by employes which was actually rendered before the period for which accruals are made. Where the charging of such amounts seriously distorts the expenses of any one year, the amounts may be spread over a reasonable period of years.

Of course, the telephone company may do this only where it has (in the words of the FCC regulation) "definitely undertaken by contract to pay pensions to employes when regularly retired for superannuation or disability and has established a fund to be held in trust for such pension purposes."

It must be kept in mind that FCC accounting regulations are not binding upon, and do not necessarily have any effect upon, what a *state* commission may allow as proper operation expenses in an *intrastate* rate case. The FCC regulations apply only to the *interstate* service of the Bell System companies

and a few Independent companies, subject to FCC regulation. Furthermore, they apply only to how the books are kept regarding such interstate service.

If, as, and when one of these telephone companies ever has an *interstate rate case* before the FCC, the commission would doubtlessly follow along the indicated lines of its accounting procedure, and allow all such pension costs to be deducted as *operating expenses* for purposes of determining the reasonableness of the rates. But such a result would follow as a matter of logic and consistency, not of legal necessity. Also, it will be remembered that FCC has never had a full-dress interstate telephone rate case—one which proceeded to the point of allowing operating expenses—in its two decades of existence.

But as an example of how a contrary practice may be followed by a state commission with respect to intrastate rate-making, one need only to consider the recent decision of the Ohio commission in reducing a rate increase (previously allowed) for the Cincinnati & Suburban Bell Telephone Co. The Ohio commission, in this case, was ordered by the Ohio Supreme Court to disallow as recurring expenses payments made to reduce the deficiency in the actuarial pension reserve.

The syllabus of the Ohio Supreme Court's opinion stated in part as follows:

"Contributions by a telephone company to the amortization of a deficiency in an 'actuarial reserve' for the pension fund of its employes, to cover service of such employes rendered before such fund was put on an actuarial basis, are not a proper or legal charge to be included as a recurring annual operating expense in fixing telephone rates, where such 'actuarial reserve' deficiency will be fully amortized over a period of 10 years and within 18 months after the date certain fixed by the commission for rate-making purposes."

The final result of the Ohio commission's order in that case, however, left

REA APPROVES TELEPHONE LOANS TOTALING $2,090,000

The U. S. Department of Agriculture recently announced REA Approval of three loans to improve and expand telephone service in rural areas of Michigan, Virginia and Montana. Details of the loans which amounted to $2,090,000 follow:

Chatham (Mich.) Telephone Co., $221,000 on June 7, second loan to borrower.

With these loan funds, the borrower proposes to expand its territory into adjacent unserved areas in northern Delta County and the Skandia community in Marquette County.

About 88 miles of additional line and other facilities will be constructed to serve 255 subscribers not included in the original loan of $337,000 approved in September 1952. The new loan will also provide for a new headquarters-central office building at Chatham.

The two REA loans will enable the Chatham company to serve 964 subscribers of which 658 are now without telephones. About 190 miles of new line will be constructed and 62 miles of the existing line rebuilt.

Dial central offices for the system will be located in Chatham, Trenary, Au Train and Skandia.

Subscribers will be able to make calls without toll charge among the Chatham, Trenary and Au Train exchange areas. Under present plans, Skandia subscribers will have similar service with their nearby trading center, Marquette.

The finished system will consist of 267 miles of line in Alger, Delta and Marquette counties. Julius Sivula is president of the Chatham Telephone Co. and Lauri Olilla is manager.

* * *

Southern Telephone Co., Charlottesville, Va., on June 7, $915,000. The applicant, a new commercial organization, is planning to finance the improvement and extension of rural telephone service in Campbell, Charlotte, Cumberland, Halifax, Nottoway and Prince Edward counties.

With its own funds, the borrower proposes to acquire from the Virginia Telephone & Telegraph Co., 104 miles of line serving 507 subscribers mainly in Campbell County.

In addition, the facilities acquired will include some few subscribers and lines from other exchanges of the Virginia Telephone & Telegraph Co. near the towns of Blackstone, Crewe and Farmville in non-contiguous areas.

With the REA loan, Southern Telephone will rebuild 28 miles of the existing line, construct 589 miles of new line and install new dial central office facilities at Brookneal, Gladys and Rustburg.

These improvements will make it possible for the company to serve a total of 2,013 subscribers, including 1,506 rural families now without telephones.

Of the completed 693 miles of line, 285 will be constructed by the borrower in the rural areas near Blackstone, Crewe, Farmville and Halifax to serve 762 of the Southern Telephone subscribers who will receive exchange service from the Virginia Telephone and Telegraph central offices in those four towns.

Duane T. Swanson is president of the Southern Telephone Co.

* * *

Triangle Telephone Association, Havre, Mont., $954,000 on June 10, to finance the improvement and extension of rural telephone service in Hill, Liberty, Chouteau and Blaine counties.

The prospective borrower proposes to construct a modern telephone system to serve 1,184 subscribers, including 994 now without telephone service, in north central Montana.

The cooperative plans to acquire with its own funds the Rudyard Telephone Co., the Joplin Telephone Co., and the farmer-owned line south of Rudyard. The acquired facilities are now serving 190 subscribers, including 51 switched stations, who will become regular subscribers of the Triangle system.

The REA loan funds will be used to improve and expand the acquired facilities. Approximately 1,300 miles of new line will be constructed, and 35 miles of the existing line rebuilt.

Dial central offices will be located at Joplin, North Joplin, Rudyard, Gildford, Kremlin, North Havre, South Havre, Loma and Box Elder. Service without toll charge will be available between the Joplin and North Joplin exchange areas.

The completed system will consist of 1,335 miles of line. Thomas Staff is president of the Triangle Telephone Association.

the company with an adjusted return of 5.84 per cent on a reproduction cost rate base. The New York commission practice allows the pension costs as an operating expense.

FCC's Own Red Hunt

U. S. Federal District Judge Edward A. Tamm of the District of Columbia has ordered the FCC not to proceed with a hearing concerning allegation that a publisher-broadcaster, Edward O. Lamb, was once a communist. Earlier this month Judge Tamm dismissed Lamb's suit to halt the hearing, scheduled to start July 28. Lamb's attorney, Russell M. Brown, announced then that he will appeal Tamm's ruling to the U. S. Court of Appeals.

Judge Tamm's order prevents the FCC from holding the hearings or taking any steps in connection with it until Lamb's counsel can appeal. The customary time allowed for filing appeals is 60 days. The FCC ordered the hearing to determine whether Lamb's repeated denials of any former communist associations were true. Lamb is publisher of the Erie (Pa.) *Dispatch* and has several radio and television stations.

The court proceedings involve Lamb's allegation that one of the FCC members was prejudiced against him. The suit was started after the FCC had scheduled public hearing for July 28 on whether Lamb's statements to the commission denying former communist associations are "true, correct, and accurate." Lamb's attorney did not name the commissioner making the charge. But an informal statement by Lamb's attorney left no doubt that he was referring to President Eisenhower's own appointee to the FCC, John C. Doerfer of Wisconsin. Doerfer was recently renominated by the President for a full seven-year term on the commission.

Federal Judge Tamm had previously blocked Lamb from testifying on the subject of bias. Judge Tamm said that statements about "bias and prejudice" were outside the scope of such court proceedings. FCC Commissioner E. M. Webster took the position that the full seven-member commission instead of an FCC examiner should conduct the hearings on alleged communist associations of Edward O. Lamb during previous years. The FCC had already assigned Examiner Herbert Sharfman to hold the July 28 hearings.

This lawsuit by the licensee, Edward O. Lamb, against the FCC on grounds of bias is most unusual. Ordinarily such a suit is quite difficult to maintain. A commissioner is a legislative officer and his fairness cannot be challenged in the same way as a party to a court proceeding could challenge the fairness of a judge. Even though a commissioner may have expressed himself generally before conducting a rate case, even though he may have run for election on a plank pledging a reduction of utility rates, a presumption of the regulatory official conducting himself honestly and fairly is pretty conclusive. It ought to be even more conclusive where only one member out of seven is charged with alleged bias.

In the case of Georgia Continental Telephone Co. v. Public Service Commission (1934) 6 PUR NS 359, a federal court said: ". . . Notwithstanding political platforms and administrative policies, appointees who take the oath of office must be considered to act honestly and in accordance with law and duty except as their official acts when performed prove otherwise. Courts will test these acts on their several merits, but will not investigate the politics of appointment."

CIO Views Clash on Public Ownership

Recently in New York City, before a Task Force of the Hoover Commission on Organization of the Executive Branch of the Government, CIO union officials presented diametrically opposed views on the subject of public ownership and operation in the utility field. The CIO utility workers strongly opposed publicly owned electric power projects. But two national CIO spokesmen called for government power competition as a "yardstick" measure for business-managed utility performance.

The contrast emerged as the Hoover Commission's Task Force on Water Resources and Power closed two days of public hearings in New York City under the chairmanship of Admiral Ben Moreell, USN, Ret. The 26-member task force, part of the commission headed by former President Hoover, is to report to Congress early in 1955 on efficiency and economy in government operations.

Earle J. Machold, president of Niagara Mohawk Power Corp., who filed a statement on behalf of five utilities seeking private operation at Niagara, contended that New York State's bid to run the project would involve the first government operation of a water project for electricity alone. This, the statement noted, could lead to "socialization" of the nation's entire electric industry.

President Andrew J. McMahon of Local 1-2, CIO Utility Workers Union of America (with 27,000 members in New York State and nationwide contracts for 90,000), emphatically asserted "we do not want to be employes of any government or governmental agency." He declared employes were "unable to bargain collectively with their government employer" and government industries resisted paying prevailing rates. His union's members, Mr. McMahon remarked, objected as taxpayers to bearing part of the electric bill for government operations in other regions.

Speaking for the National CIO, Solomon Barkin, research director for the Textile Workers Union of America, called for "multipurpose" federal development of New England rivers. With no federal power project there now, he asserted, the region's electric rates are 52 per cent above the national average and "share at least some portion of the blame" for loss of jobs and business.

Also as a national CIO spokesman, Stephen G. McMullen, Niagara Falls director of the United Gas, Coke, and Chemical Workers of America, said that a senate bill, approved in committee, failed to require preference in electric sales to public and cooperative systems even while authorizing state power development. This, he complained, would mean sale of power to private companies without a "yardstick effect."

Western Union Rate Increases

Western Union Telegraph Co. holds increased wage costs, resulting from union contract renewers, to be responsible for the telegraph company's recent action in filing for revised rates in interstate messages and money orders. The petition was filed by Western Union with the FCC for approximately 10 million dollars increase on both interstate and intrastate messages.

To ease the impact of the boost, Western Union is undertaking to encourage greater uses of the telegram service through special incentives. One of these is a 20-cent discount which will be applied on each message over and above 100 a month, sent out by those who use direct wire connections with the telegraph system.

The discount will recognize Western Union savings in labor costs on messages transmitted by customers to the telegraph company over facsimile, teleprinter, and other direct wire connections. Such a monthly minimum figure was set because equipment and maintenance costs offset labor savings in the first 100 messages. As a result of the discount feature, unique in the telegraph company's 103-year history, over-all telegraph costs for such telegraph users with direct wire connections will be less than before the excise tax reduction last April 1.

Another incentive in the continuation of the more generous minimum words in straight telegram (15-word

(Please turn to page 40)

ABC of the Telephone

By FRANK E. LEE

PART 70—SECTION VII. Central office maintenance—how to read circuit drawings. The preceding article in this series appeared in the March 20 issue, page 19.

IN THE PREVIOUS article of this series, interrupter-controlled timing circuits were discussed to show how care must be taken to be sure a circuit is properly analyzed during the various stages of its operation.

Careful analysis of a circuit usually is the key to the most efficient fault-locating procedures. The basic reasons for analyzing a circuit are as follows:

(1) To determine the function of a circuit and how it works.
(2) To locate the circuit elements involved in any operating stage.
(3) To assist in maintenance of the circuit.

A good approach in the analysis of any circuit is on the basis of a single function or of a separate stage of operation. In other words, the circuit is broken into small parts that are easily understood.

Once placed in service, a circuit generally is maintained on a function basis. A report of trouble or a trouble indication, usually is caused by the loss or impairment of a function. Therefore, if a circuit is analyzed on the same basis, the out-of-service time of the circuit will be held to a minimum.

In the all-relay timing circuit selected for discussion in this article, the operation of the circuit is divided into various stages of operation. Once the circuit starts to function, the advance from one stage to another coincides with the release of the (C-2) relay.

A Typical All-relay Timing Circuit

All-relay timing circuits generally are used where it may not be economical or practical to install a motor-driven interrupter for timing purposes. In these circuits, the timing interval is controlled both by the operating and release speed of the relays and by the re-operation of certain relays at various stages in the complete cycle of the circuit.

Where relatively long timing cycles are required, the circuit may include one or more piston type relays of the type discussed in the reprint edition "ABC of the Telephone," Volume I.

The all-relay timing circuit selected for discussion in this article was designed for use with a group of central office or PBX station lines which are terminated on a multiple line key cabinet or order turret. Usually these lines are equipped with individual line lamps as well as with a common buzzer.

When an incoming call is received on any line, the associated line lamp remains lighted until the call is answered. This shows the customer on which line an unanswered incoming call is located. If the incoming call is answered in a predetermined period of time, the line lamp and buzzer are automatically disconnected.

However, if the key cabinet or order

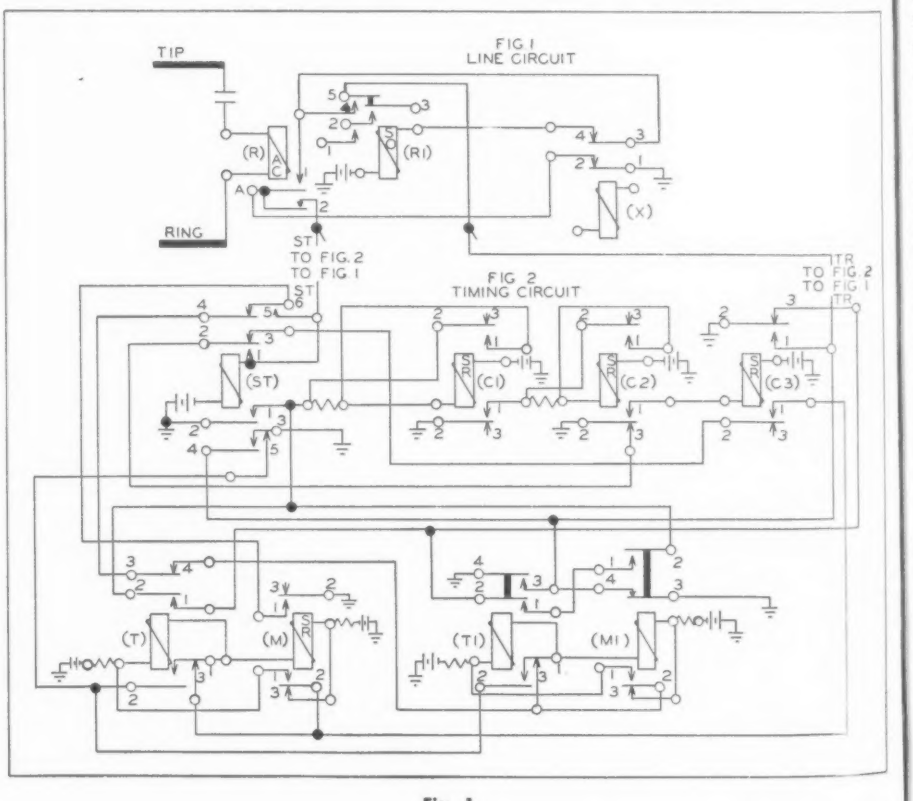


Fig. 1

turret is unattended, as for example during night, evening, or lunch hours, an unanswered call generally would be abandoned by the calling party. In view of the continuous signal feature provided in the line circuit, the secondary signalling circuit would not be released when the call was abandoned by the calling party. Therefore, the line circuits are equipped with a relatively inexpensive all-relay timing circuit which will retire the continuous signals on an abandoned incoming call in approximately 10 seconds.

The essential elements of this all-relay timing circuit are shown in *Fig. 1.*

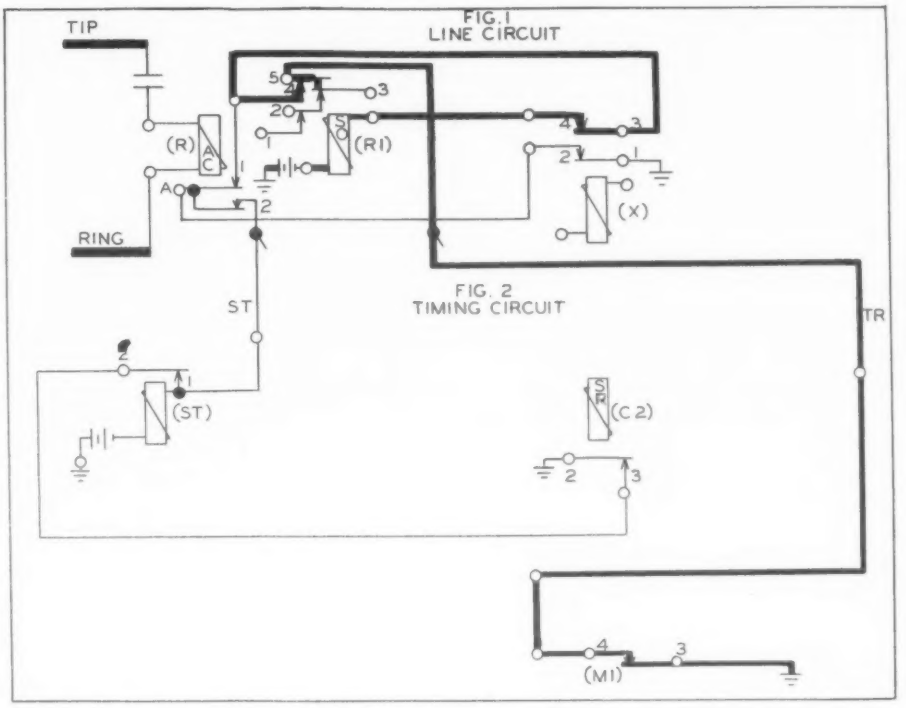


Fig. 2

Circuit Description

When an (R) relay connects ground to the timing circuit, relay (ST) operates and locks. Relay (ST) operates relay (C1) which operates relay (C2) which in turn operates relay (C3). At the completion of the ringing interval, relay (ST) releases, which in turn releases relay (C1). Relay (C1) releases relay (C2) which operates relay (T) and releases relay (C3). Relay (C3) operates relays (M) and (C1).

Relay (C1) operates relay (C2) and relay (C2) operates relay (C3). Relay (C1), (C2) and (C3) release. When relay (C2) releases, relay (T) releases and operates relay (T1) which connects ground to the "TR" lead. When relay (C3) releases, relay (M) releases and operates relay (M1). Relays (C1), (C2) and (C3) operate and release.

When relay (C2) releases, relay (T) operates. When relay (C3) releases, relays (M) and (C1) operate. Relays (C2) and (C3) operate and then relays (C1), (C2) and (C3) release.

The release of relay (C2) releases relay (T) which in turn releases relay (T1). The release of relay (C3) removes ground from the "TR" lead, and thus releases all operated (R1) relays on this circuit or associated circuits. Also, the (M) relay is released which in turn releases relay (M1).

The (C1) and (C2) relays are wired so that a resistance is in series with their windings. As a result, they are slow in operating. When these relays are operated, the resistances are short-circuited so that the windings will receive a soak current and be slow in releasing.

If, during the operation of the chain of relays in the timing circuit, an (R) relay is re-operated by an impulse of ringing currents, the (ST) relay will re-operate. The circuits to the (T), (M), (T1) and (M1) will be opened and any of these relays which may be operated will release. When the ringing impulse ceases, relay (ST) will release and start the timing circuit functioning once again.

If the (R) relay is not re-operated during the functioning of the timing circuit, any operated (R) relay will be released which will extinguish the line lamps and silence an audible signal connected to the circuit.

In the foregoing circuit, the (R1) relay remains operated during the silent interval in the ringing cycle. This will provide a continuous line lamp and audible signal to help the subscriber determine on which line of a group of lines an incoming call is waiting. The timing circuit provides a means of releasing the (R1) relay, to extinguish the line lamp, and to silence the audible signal when the call is abandoned because of a "don't answer."

The "ST" lead is said to be common to all the line circuits in a particular group because it is looped or connected to all the (R) relays. If incoming calls should appear simultaneously on two or more lines of a group, the timing circuit would start to function after the last call was abandoned.

It will be noted that certain portions of the line circuit shown in *Fig. 1,* have been eliminated for clarity. Also, in accordance with usual circuit customs, the line circuit is designated as *Fig. 1* and the timing circuit as *Fig. 2.* To avoid the possibility of confusing figure numbers on the drawing with figure numbers used in this article, the two parts of the circuit will be referred to by name instead of by figure numbers. As a result, reference to figure numbers will be to individual figures in the article, as in previous articles in the ABC series.

At first glance, the circuit description that accompanies the circuit shown in *Fig. 1* makes this circuit appear rather complicated. Relays seem to operate and release in cascade arrangement for little apparent reason. However, this circuit has the basic timing circuit relays (T) and (M) which were discussed in PART 69 of this series which appeared in the March 20 issue of TELEPHONY.

Also, the circuit has a second pair of timing relays (T1) and (M1). These relays operate in a tandem sequence with the (T) and (M) relay combination. In this way, the timing interval of the circuit is extended. Also, if it is remembered that the release of the (C2) relay starts the advance to the next stage of the operation, the circuit can be understood more readily.

Tracing the Circuit

STAGE 1: Fig. 2 shows the operating paths for the (R) and (R1) relays in the line circuit and the (ST) relay in the timing circuit. The (R) relay operates on the generator signal which originates in the central office or PBX.

The (R) relay releases during the silent interval of the generator signal; therefore, an auxiliary relay (R1) is used to provide a continuous signal associated with this line circuit. Generally, the signal consists of a lamp for each line and a buzzer that is common to a group of lines. The lamps and buzzer have been eliminated from *Fig. 2* for clarity.

Battery, connected to the winding of (R1) goes to the 4-3 top normal con-

tacts of relay (X) in the line circuit, through the A-1 operated contacts of the (R) relay and then to ground at the 2-1 top normal contacts of relay (X).

When relay (R1) operates, a holding ground shown in heavy lines in *Fig. 2*, which originates at the top 4-3 normal contacts of relay (M1), follows the "TR" lead, and is cut into the circuit at the top 5-4 contacts of the (R1) relay. As a result, the (R1) relay will remain operated until either the (X) relay or the (M1) relay operates.

The operation of contacts A-2 of relay (R) also extends ground from the 1-2 top contacts of relay (X), over the "ST" lead to the winding of the (ST) relay in the timing circuit. Relay (ST) operates and a locking ground is established through its top 1-2 contacts to the normal 2-3 bottom contacts of the (C2) relay. This locking ground insures that the timing circuit will function in the event an incoming call is abandoned immediately after the (R1) relay is operated.

STAGE 2:

Fig. 3 illustrates that the operation of relay (ST) closes ground through its bottom 2-1 contacts to operate relay (C1). Ground from the operated bottom 2-1 contacts of relay (C1) operates relay (C2). Ground from the operated bottom 2-1 contacts of relay (C2) operates relay (C3).

As mentioned previously, the resistors in series with the windings of relays (C1) and (C2) make these relays slow operate. However, when the relays operate, the top 2-1 contacts shunt the resistors and cause a soak current to be applied to the windings. As a result, they also are slow release. Inasmuch as these relays serve as steppers for the (T) and (M) relays, the time delay introduced in the operating cycle of the (C1) and (C2) relays increases the over-all measured time interval of the timing circuit.

At the completion of the ringing interval, relay (ST) releases. This, of course, assumes that sufficient time has elapsed to permit relay (C2) to operate. Otherwise relay (ST) will release when relay (C2) operates. It will be recalled, as shown by a heavy line in *Fig. 3*, that the locking ground for the (ST) relay originated at the bottom 2-3 contacts of the normal (C2) relay.

STAGE 3:

The release of relay (ST) also releases relay (C1) which in turn releases relay (C2). At this point in the operation of the timing circuit, with relay (C2) normal, the operating path of relay (C3) is opened. However, because of the slow release characteristics of relay (C3), a circuit is established to operate relay (T), as shown in *Fig. 4*.

Fig. 4 also shows that relay (M) does not operate at this time because a shunt is placed across its windings.

When relay (T) operates, the bottom 2-1 contacts transfer the holding ground to the source of ground that originates at the bottom 5-3 contacts of relay (ST) (see heavy line on *Fig. 4*).

When relay (C3) releases, the shunt across the windings of relay (M) is removed. As a result, a circuit is completed from battery at the (M) relay to ground at the bottom 5-3 contacts of the (ST) relay to operate relay (M) (see heavy line on *Fig. 4.*) For this reason the circuit description is correct in crediting the operation of the (M) relay to relay (C3).

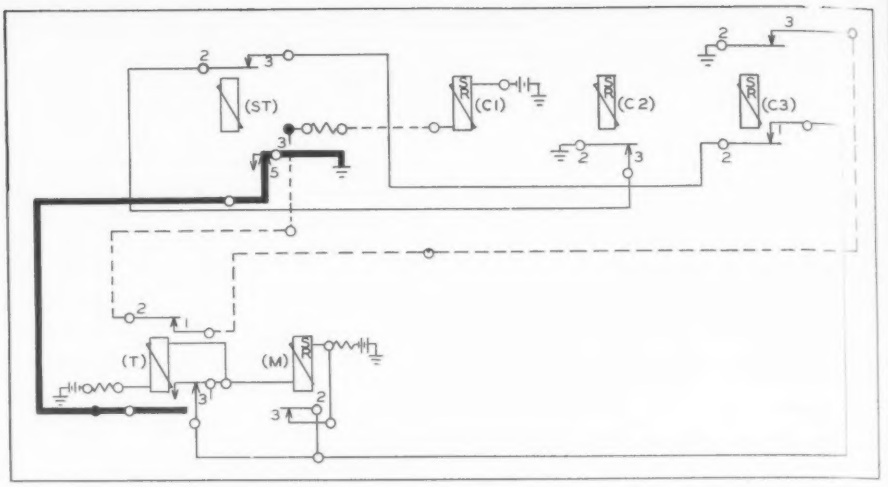


Fig. 4

Also, the release of relay (C3) closes ground through its 2-3 top contacts, over the portion of the circuit shown in dotted lines on *Fig. 4* to re-operate relay (C1). Relays (C2) and (C3) re-operate the same as shown in *Fig. 3*. When relay (C3) re-operates, the (C1) relay releases because its operating ground has been opened at the (C3) relay. Also, as previously described, relays (C2) and (C3) release.

STAGE 4:

When relay (C2) releases, ground is closed through the normal 2-3 top contacts of the (ST) relay, over the circuit as shown by regular width solid lines in *Fig. 5*, to place a shunt across the windings of the (T) relay. Relay (T) releases and the circuit shown in heavy lines operates the (T) relay, and at this time places a shunt across the windings of the (M1) relay. Relay (M) remains operated because of the transfer of the ground source at the normal 1-3 bottom contacts of relay (T). See the shaded lines in *Fig. 5* on page 42.

The release of relay (C3) will release relay (M), which in turn, by

(Please turn to page 42)

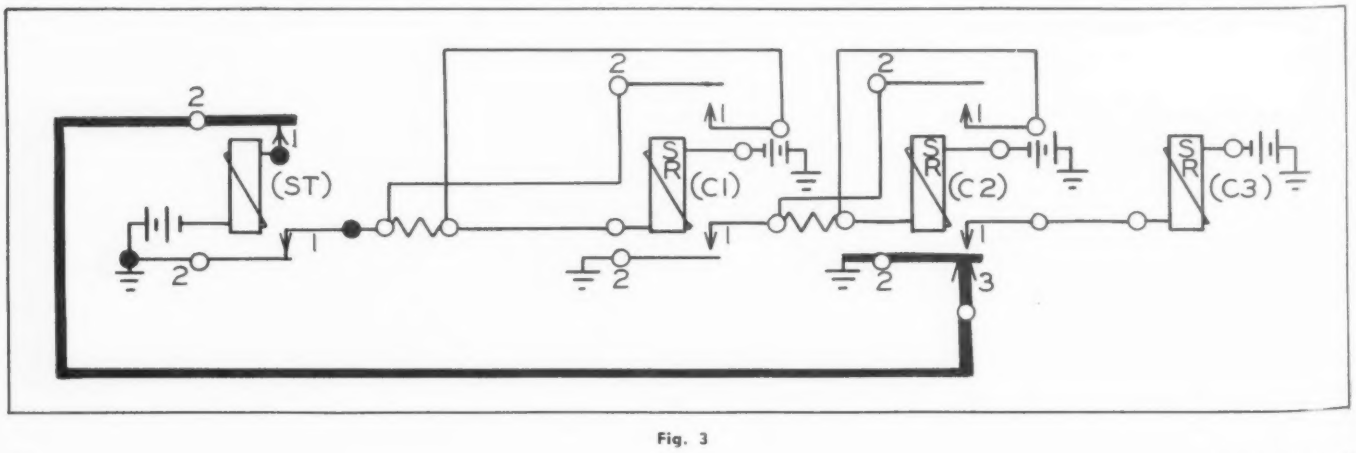


Fig. 3

THE PLANT MAN'S Notebook

by Ray Blain, Technical Editor

THE Lincoln (Neb.) Telephone & Telegraph Co. recently introduced an employe induction program which is certainly a step in the right direction. The word "induction" as it is associated with "Employe Induction Programs" means the formality of introducing the new employe to his job.

Induction is what you tell the new employe about his job; what you say to sell him on working for your company; how you introduce him to his job, his associates, and his supervisor. It means that how you demonstrate what is expected of him will to a great extent determine his future attitude toward his job.

The purpose of the induction is to convince the new employe that here is a place that offers job security and stability; here is a place where the pay is fair and where raises and opportunity for raises and greater responsibilities are present.

Induction programs are by no means new, as the Army and many telephone companies have had long and varied experience in dealing with induction procedures. Interest in these programs has tended to rise and fall with changes in war and business activity which is an important factor in increasing personnel turnover rates.

Employe induction programs are presented in many and varied forms depending upon the needs of each individual company and the objectives they desire to achieve.

A program that would fit the needs of a company hiring a large number of new employes would probably be impractical for the smaller company. However, even the smallest companies now recognize the importance of good induction programs and the value of getting the new employe off to a good start.

A new employe's first few days on the job are difficult and trying, especially if the work to be performed is entirely new to him. And in those first few days he forms definite impressions about his job and the company he works for. First impressions are lasting impressions and it is the desire of the Lincoln company, through the medium of a well planned employe induction program, to make their employes' first impressions of the company as favorable as possible.

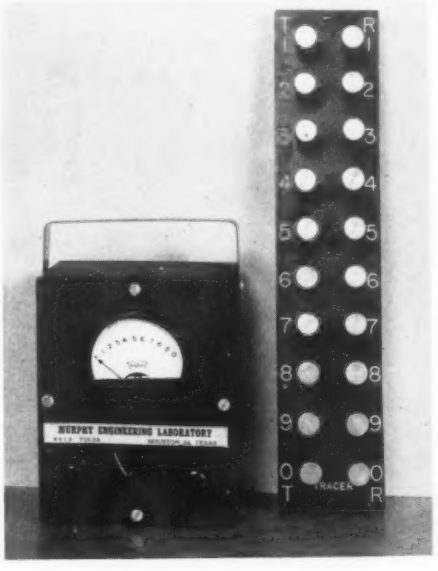
It is sincerely believed that other Independent companies would do well to follow a similar plan as it is certain to provide a big boost for employe relations.

• • •

Freland M. Murphy, chief switchman for the Southwestern Bell Telephone Co. down in Houston, Tex., encountered a problem while working on the design and installation of a sound and intercommunication system for his church.

This work was being done in his spare time and at such irregular hours that it was often difficult to get anyone to help him test out the circuits. For this reason, he got out his pencil and paper and designed a one-man test set.

This set proved to be highly satisfactory and now he is being flooded with orders. He has sold over 500 and more requests are coming in daily.



A terminal board with bridged resistor is connected to the distant end of the cable in which pairs are to be identified and tagged. Then, the milliammeter is adjusted to read zero and compensate for the resistance of the cable pair. When the circuit is closed over pair one, it reads 1, etc.

The terminal board is connected so that when the tip side of the pair is identified the meter reading indicates "tens" and the ringside "units." In this way, a 100-pair cable may be tagged by one man.

Necessity may be the mother of invention, but we learned long ago that if a telephone man is pushed hard enough, he will invariably come up with the correct answer to almost any problem.

• • •

It has been said that public relations might very well be defined as the art of not treating the public like relations.

• • •

The writer enjoyed a nice chat recently with C. S. Cadwell, president of Automatic Electric Co., when the latter visited Washington, D. C. We discussed the numerous improvements being made daily in our communication systems.

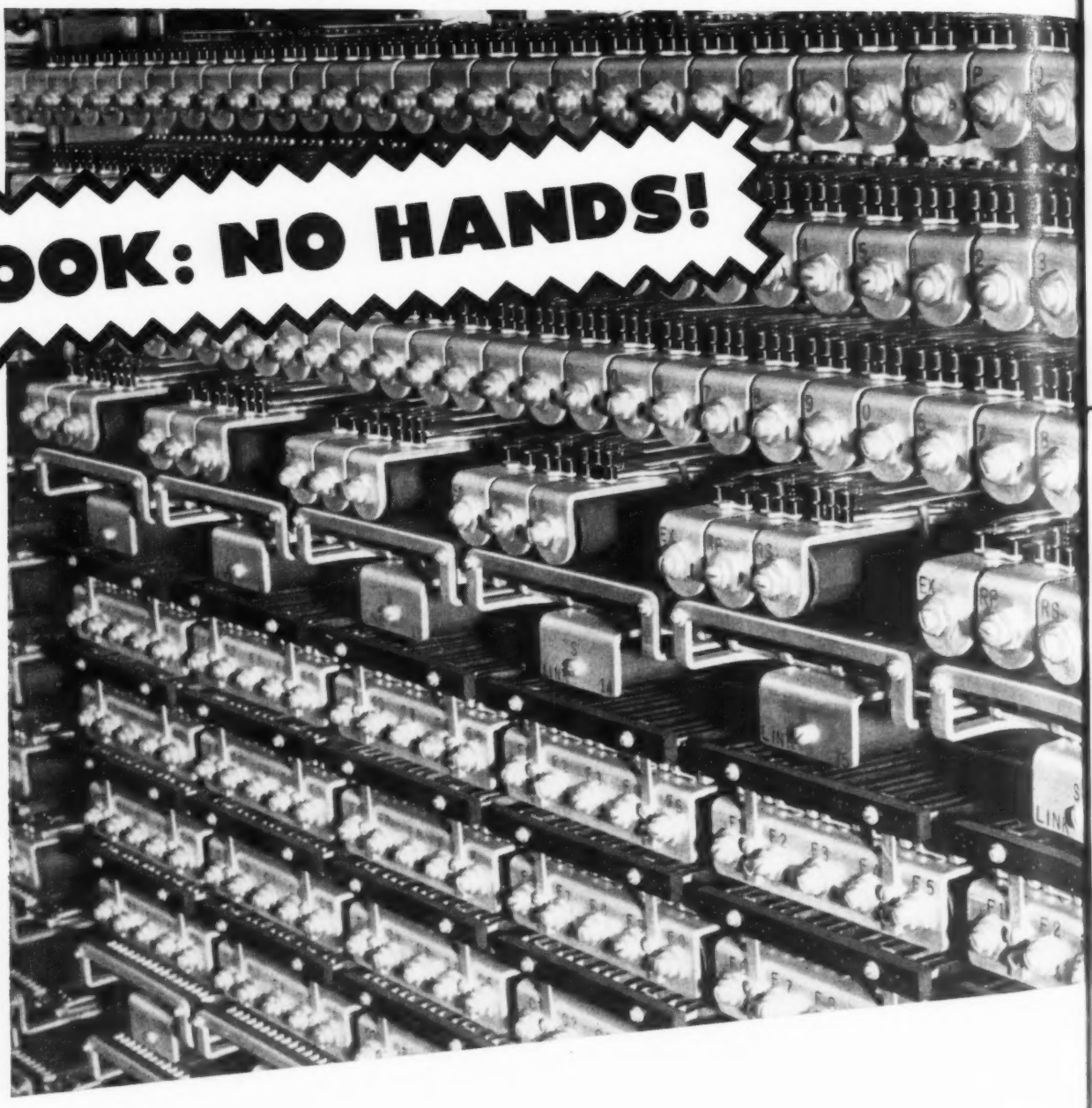
Charlie told us about a friend of his who predicts that at some future date, a young engineer will rush into his boss' office and excitedly advise him that he has just discovered the startling fact that one mechanical stepping switch will replace over 200 transistors. Then everyone will take immediate action to junk transistors and convert to mechanical switches.

Naturally, we don't seriously believe that this will ever happen, but it makes a good story anyway.

• • •

It has been said that the time men spend in trying to impress others could be spent in doing the things by which others would be impressed.

LOOK: NO HANDS!



Temperature variations have so little effect on these all-relay assemblies that your unattended North exchanges will require no special heating installations.

NORTH

THERE is, of course, nothing new or surprising about a telephone switchboard unattended by operators. BUT! when we brag about "No Hands" we are referring to something *beyond* the mere handling of calls without manual aid. North "All-Relay" switchboards also serve year in and year out without extra "hands" for constant servicing. North friction-free, self-cleaning relays (and North boards are truly *ALL* Relay) provide uninterrupted switching with nothing more than occasional preventive maintenance.

You must see a North "All-Relay" exchange in action, look into its maintenance record, to appreciate how much you can save, how much better you can serve with North equipment. Let a North field engineer show you the facts on . . .

NORTH *"All Relay"* EXCHANGES

THE NORTH ELECTRIC MANUFACTURING COMPANY

Go North for Service and Satisfaction

601 South Market Street, Galion, Ohio, U.S.A.

Pennsylvanians Consider Changes In The Economy

by Dan S. Fargo

THE Pennsylvania Independent Telephone Association continued its record of holding annual conventions in picturesque locations, and attracted a new high number of people —512—to Bedford Springs, on May 25 and 26. Facilities at the Bedford Springs Hotel were extensive and afforded welcome and relaxing contrast to the well-worthwhile convention sessions.

Following the invocation, Association President Lewis F. Shepherd, president of the General Telephone Co. of Pennsylvania, Erie, presented his address. Mr. Shepherd recalled that those in the telephone industry who meet the public every day have been looking forward to the time when there would be few held orders. Now, he said, in a few areas of the state the industry is beginning to feel the effects of an economic change.

For example, he cited the fact that in some localities the number of service terminations is exceeding the number of applications for service, and that there is an increasing number of service terminations because of non-payment. Mr. Shepherd went on:

"To some of the younger people in the business, this economic change is a new experience; but to some of the older people, and more particularly to those who were in the telephone business during the period from 1930 to 1933, this economic adjustment has a somewhat different significance.

"I hasten to add, however, that I do not believe we are plunging into a great business depression. There is plenty of evidence to indicate that the year 1954 will be about as good as 1953 for most lines of business. I believe the present economic adjustment was inevitable—it is spotty, and it is hoped it will help to control some of the factors contributing to inflation."

Mr. Shepherd asked:

"How long is it since a representative of your company has called on, say, each of your company's 10 largest customers at a given exchange, to inquire into the adequacy of his present telephone facilities, or to find out if his service is satisfactory?

"Don't you agree that this would be a good thing to do at regular intervals?

"You might be surprised to learn that the business of some of your customers has increased substantially —that the service and facilities serving a number of them are now inadequate and should be enlarged or modernized.

"I believe it is a good plan for telephone representatives, as a matter of policy, to continuously expose themselves to their customers. I suspect there are quite a few of your customers who would welcome a personal call from a representative of the telephone company—I mean, of course, someone other than the installer-repairman who in the performance of his work is of necessity required to call at the customer's premises to do certain installations and repair work. I am referring to your commercial department and management personnel, and —if yours is a small company—that person may be you. . . .

"I think it is our duty and obligation to recommend the quantity, type and kind of facilities and services best suited to meet the customers' requirements. We must sell, and customer contacts thus made are a splendid public relations media. There's a pretty good chance such contacts will make the customer a little more friendly toward the telephone company—he will be better satisfied with the service your company provides and additional revenue will accrue to the telephone company."

Mr. Shepherd explained that selling must extend beyond just the sale of new or additional facilities and services. Selling must include selling the company and what the company is doing or what it plans to do to maintain, improve or modernize service. He said most customers know very little about the operations of a telephone company. Therefore, he recommended that one never pass up an opportunity to invite customers to go through the telephone exchange build-

LEWIS F. SHEPHERD, outgoing president, addressing the convention on the significance of changes in the economy.

ALBERT C. HERBERT, executive vice president of the Pennsylvania association, summarizing the year's accomplishments.

LEFT PHOTO: In attendance at the Pennsylvania convention were (left to right): FRANK LOFTUS of the Pennsylvania Public Utility Commission; HAROLD G. PAYNE of Export, and FRANK D. McCARTHY of Erie. RIGHT PHOTO: PAUL L. COWAN of Erie, retiring president of the Keystone State Pioneer chapter, presented 50-years-of-service pins to DANIEL S. SEITZ (left) of York, and C. E. JONES of Erie, a past president of the Keystone Pioneers. (Photos courtesy of C. H. HESS of the General Telephone Co. of Pennsylvania, and of the Pennsylvania association.)

ing, to inspect the equipment, and to become acquainted with people at the telephone office.

Mr. Shepherd observed that, "When it comes to selling the company to its customers, and also when selling additional service and facilities, the employes of any telephone company constitute a well-qualified sales force. It is almost certain the sales result of the company's employes will be measured to a great degree by the sales attitudes of the management of the company. If the boss doesn't sell his company to the employes, you can be pretty sure the employes won't do much selling of the company to the customers."

On the subject of industry and population migration from cities, Mr. Shepherd said, "I think this movement will continue and there will be substantial growth in both industry and population in a great number of the smaller communities. It is reasonable to expect that there will be substantial growth in telephones in these small communities, a great many of which are served by the Independent telephone companies. A study of statistics on the number of telephones in this country shows that the number of telephones per hundred population has increased from 16.8 telephones per hundred population in 1941 to 30 telephones per hundred population at the beginning of 1953. This is an increase of 82 per cent, and a very substantial increase in saturation. There is no indication that this trend will change in the immediate future."

Mr. Shepherd continued:

"The population of this country is at about 160 million today. It is estimated the population will be in the neighborhood of 180 million by 1960—six years hence. I am quite sure this increase in population will not occur only in the Bell-operated exchanges, nor do I believe that we have reached the maximum saturation obtainable in many of the Independent-company-operated exchanges."

Mr. Shepherd also described the need for the telephone industry to provide a dependable network of communication lines and facilities should this country come under attack, or should any major emergency arise. He remarked, "You may say that it can't happen here, but I wish to caution anyone who takes that point of view that this attitude is pretty much like the ostrich putting his head in the sand."

Mr. Shepherd inquired:

"What will your company do in the event of an attack?

"How many operators or other employes do you have who will agree to stay at their assigned positions of duty, should an actual attack occur?

"What plans do you have for the restoration of service in the event your telephone plant and your community is in the target area under attack and is damaged?

"If you do not have the answers to these questions and a number of other related questions, then I urge you to start to think about what you and your company will do under such conditions.

"Because the sparsely populated communities will become the support areas to heavily populated cities, the people in these sparsely populated communities must prepare to cope with handling the great masses of people that will be moved into their community in the event the heavily populated cities are evacuated.

"I believe there are real and genuine reasons for us to be concerned about what is happening in other places in the world. While it is true these places are thousands of miles away, and therefore seem unimportant, the incidents that occur there are pieces on the chessboard of world power and domination. There is no one who can state with assurance that we will not become involved in another world conflict.

"While all of us hope, of course, that there shall be no such conflict, I think we are all aware that we are not making effective use of either the time that is now available to us, nor effective use of our energies in preparing for national defense."

The report of the executive vice

(Please turn to page 30)

Keystone Pioneers Meet

The Keystone State Chapter of the Independent Telephone Pioneer Association held its annual meeting at Bedford Springs on May 25. The directors elected the following officers: President, William P. Strickenburg of Meadville; vice president, Arthur S. Watson of Oil City; treasurer, Mrs. Bertha Brossman Eaby of Ephrata, and secretary, Mrs. Mary G. Hadlow of Erie.

At the evening entertainment (May 26) sponsored by the Keystone State chapter, C. E. Jones of Erie and Daniel S. Seitz of York received 50-year Pioneer pins presented by Paul L. Cowan, retiring president.

Also at the evening entertainment, prizes were awarded to the following:

Emma M. Rubritz of Johnstown; Harvey S. McKay and Thomas H. Conley, both of Erie; Rose Rickenbrode of Butler; Leo T. Smith of Oil City; Harry M. Thomas of Gettysburg; A. W. Hayes of Erie; L. Earl Talmage of Apollo; James W. Pusey of Erie, and Bertha M. Eaby.

Other Pioneer prize winners were:

Grace G. Gould of Kittanning; Irene Ellinger of Ridgway; William Beatman of Erie; Albert Stutz of Butler; Esther Wilson of Ridgway, and John B. Henkels Jr. of Philadelphia.

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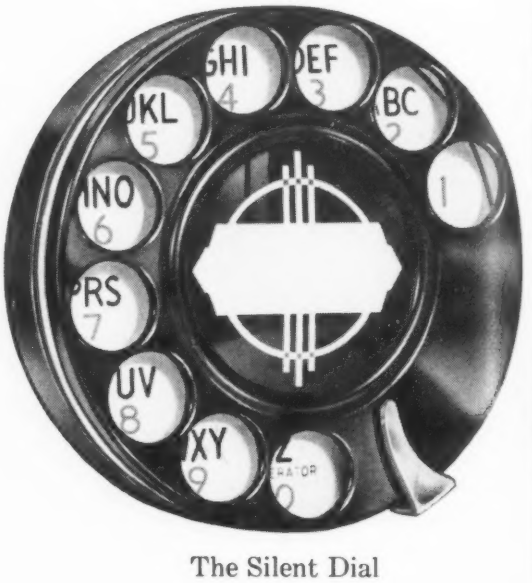
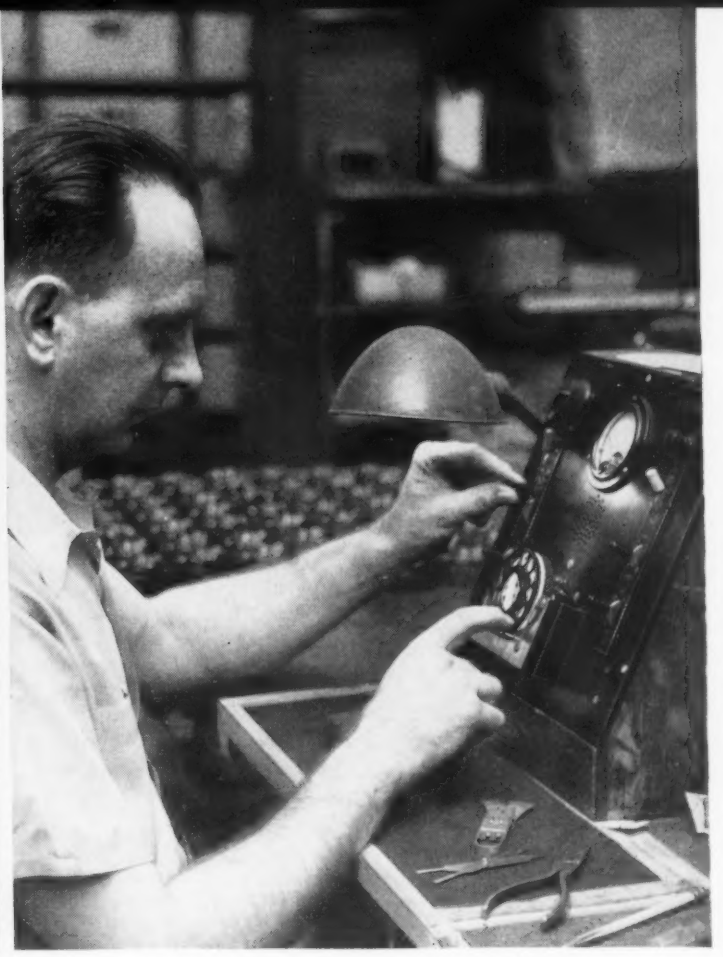
Well known the world over, Type 51 Dials are unequaled for smoothness, quietness, uniform impulsing, and long, trouble-free life. Not well known—but vital—is how Automatic makes them that way.



The Silent Dial

EXTRA skill in manufacturing



EXTRA precision in product testing

". . . And *of course* we want Automatic Electric dials!"

More and more you hear it—this demand for Type 51—the dial with the "A.E.Co." on its base. Here's why that "A.E.Co." is so important:

In design, "A.E.Co." stands for *extras* like dial know-how. Automatic made the first dial and has been adding to its store of dial data ever since. Automatic's designers draw on this great fund of knowledge as they shape each part and choose the proper material for it.

In testing materials, "A.E.Co." stands for *extras* like making sure that steel has the sulfur content needed for accurate machining, and that phenol fibre is free from shrinkage risk.

In manufacture, "A.E.Co." stands for *extras* like the type of cutting oil used on lathes, the exact temperature used in heat-treating parts, the thousand-and-one "little" things that have such a big effect in keeping your maintenance costs down.

In final testing, "A.E.Co." stands for *extras* like exceptionally high standards and the care taken to be sure every dial is *right*.

That's why they all demand Type 51's. Do likewise—today!

buy Metropolitan Dials when you buy new dials

buy Metropolitan Number Plates for your present dials

Install them as you make service calls—save unnecessary trips later when you convert to "2-5" numbering.

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president, Albert C. Herbert of Harrisburg, followed. Impressive growth figures for Independent telephone development in Pennsylvania were cited by Mr. Herbert. A 6.9 per cent increase (36,400) achieved in 1953 raised the total Independent telephones in Pennsylvania to 567,000, a 115 per cent rise in less than nine years.

Regarding the diminishing demand for telephones, Mr. Herbert observed:

"Probably the most significant indication that we are definitely tapering off, is the fact that, percentagewise, our rate of growth has dropped 2 per cent in each of the last two years. Our growth in the first two months this year indicates a continuation of this decline.

"However, we still have a large number of deferred applications which should guarantee at least a sizeable increase in stations for this year. In fact, I will venture a guess that we'll add 30,000 stations this year."

Mr. Herbert also pointed up the increasing dial development in Pennsylvania, saying that 72 per cent of Independent telephones now are dial (up from 70 per cent, the figure for a year ago). In the same year, the magneto percentage was reduced to 9 per cent. Mr. Herbert said this dial development compares very favorably with the 80 per cent figure for Bell of Pennsylvania, and exceeds the nationwide Independent average by about 12 per cent. He said, too, Independents now operate 448 exchanges in the state.

Mr. Herbert reported the preceding year's construction programs in the state totaled 18 million dollars; that $360 was spent on net plant for every new telephone, and that the average per station investment increased to $212. To make these plant additions he said, almost 12 million dollars worth of new securities were issued—made up approximately of 54 per cent common stock; 30 per cent bonds; 5 per cent preferred stock, and 11 per cent in notes.

WILLIAM P. STRICKENBURG, (left), the new president of the Keystone State Chapter of the Independent Telephone Pioneer Association, and ARTHUR S. WATSON, the new vice president.

Mr. Herbert added:

"Interest rates this year were higher than ever, ranging from 3⅝ per cent for a million-dollar bond issue, to 5½ per cent for a $40,000 note. Preferred stock issues carried dividend rates of 4½ per cent and 5 per cent.

"One of the curious things about this picture is that well over half of the companies have no long-term debt on their properties. Most of these are the smaller companies, and those that have not yet been modernized. We believe that in many of these cases this condition is due to the lack of aggressiveness on the part of the company rather than a lack of faith by investors.

"As our Small Company Committee has come to realize, one of the biggest problems in getting companies to modernize is to create the desire in the stockholders and directors.

"In order to encourage small companies to go ahead with such improvements, the commission has authorized somewhat higher debt ratios than they formerly approved. However, they rightfully still require a reasonable amount of equity money."

As to rates, Mr. Herbert said, "Once again we had a busy year having prepared 20 new rate applications, all of which have been granted, totaling $229,000. In addition, three others with which we assisted and which had been suspended from last year were granted in full. These totaled $476,000.

"At the present time there are only two rate applications before the commission. . . . While this might indicate that rate applications are falling off, we believe that many companies will be forced to seek further rate relief after the current calendar year."

Also discussed by Mr. Herbert were: Intrastate and interstate toll rates; toll call volume; extended area service; the state sales and excise taxes; the association's issuance of a new telephone map of Pennsylvania; and the financial and general condition of the association.

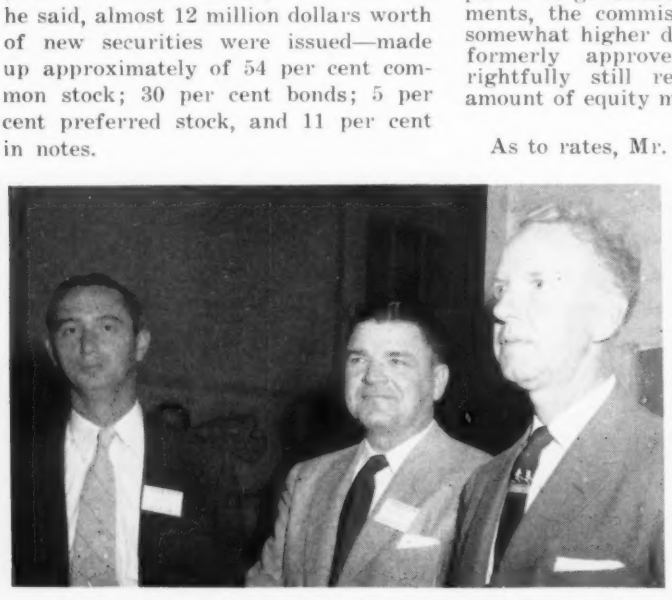
"The Report of the Small Company Committee" was presented by Harold G. Payne of Export, the committee chairman. He stated that a recent nationwide informal survey showed that, among companies having less than 500 stations, there are over 500 that are present distress cases, and approximately 1,000 more are potential distress cases. Together, the distress and potential distress cases represent almost 40 per cent of the Independent companies with less than 500 stations. Mr. Payne said distress cases are caused by:

(1) Inadequate finances.
(2) Depreciated condition of existing property.
(3) Incompetent management.
(4) The growth problem.

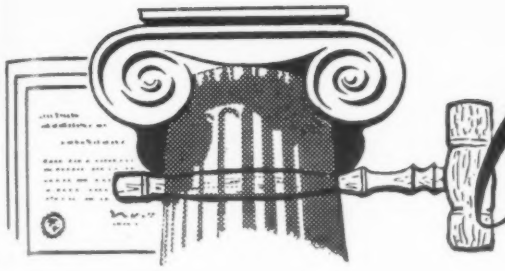
Mr. Payne listed the members of the Pennsylvania association's small company committee as follows:

Eastern District:
Alan Ryder of Bangor

(Please turn to page 38)



LEFT PHOTO: Interrupting their discussion long enough to be photographed were (left to right): PAUL HENKELS of Henkels & McCoy; HAROLD G. PAYNE of Export, and FRANKLIN SMITH of Pocono Lake, new president of the Pennsylvania association. RIGHT PHOTO: The following were panel members in a discussion of "Today's Problems." (Left to right): H. W. RASHER of the United Telephone Co. of Pennsylvania; PAUL S. DARLING of the Home Telephone Co.; K. BEN SCHOTTE of Kittanning; PEARL N. LANDEFELD of Erie; WALTER E. DICKEY and WILLIS A. BLACK, both of Cutler. Mr. Schotte was moderator.



Courts and Commissions

Nebraska Company Granted General Rate Raises

General rate increases were granted the Arapahoe Telephone Co. on June 3 by the Nebraska Railway Commission.

The new rate schedule becomes effective July 1 as follows:

	Old	*New*
One-party business (M) common battery	$4.00	$4.75
One-party business (M) magneto	3.50	4.25
Two-party business (M) common battery	3.50	4.25
Two-party business (M) magneto	3.00	3.75
One-party residence (M) common battery	2.50	2.75
One-party residence (M) magneto	2.00	2.25
Two-party residence (M) common battery	2.25	2.50
Two-party-residence (M) magneto	1.75	2.00
Rural (M) magneto	2.25	2.75
Service station	.75	1.00

The company does not use a prompt payment discount plan so rates are on a net basis.

It was said that increased traffic and maintenance expense made increases necessary. The company serves 404 company stations and 102 service stations and provides magneto and common battery service on fully metallic lines. There were no protests to the increase.

It was estimated that new rates would produce additional gross revenue of $2,232 per year. Total revenue is estimated at $20,673 and expenses $17,417, exclusive of $1,871 taxes. This results in a 4.18 per cent return on an adjusted net book rate base of $33,117.

V V

Approve Financing Program for North Carolina Company

The Matthews & Waxhaw Telephone Co., Matthews, on June 15 was authorized by the North Carolina Utilities Commission to sell 50,000 shares of additional stock at not less than par value of $1.00; to borrow up to $400,000 from The Chase National Bank of New York City, and to accept a commitment from the Stromberg-Carlson Credit Corp. for up to $400,000 worth of long-term financing.

The financing will go into the company's expansion and improvements program, the petition stating that the territory which the company serves has a growing population which demands expanded facilities.

V V

Hearings Set for Pleas by Three Illinois Companies

The Illinois Commerce Commission has scheduled hearings on telephone company petitions as follows:

On June 21, the application of the Farmington Telephone Co. for a certificate authorizing the construction, operation and maintenance of telephone property and the transaction of a telephone public utility business in the territory formerly served by Rapatee Telephone Co.;

On June 22, the application of The Shannon Telephone Co. for a proposed advance in rates;

And on June 23, the application of the Alexis Telephone Co. for a proposed advance in rates.

V V

South Carolina Co-op Wins New Rate Schedule

It was recently reported that West Carolina Rural Telephone Cooperative, Inc., Abbeville, had a new rate schedule approved by the South Carolina Public Service Commission.

At a hearing to consider the petition for the rate schedule, a witness for the co-op testified that in order to obtain building funds from the Rural Electrification Administration, the new rates were requested.

The schedule will go into effect when dial service has been established in the co-op's service area.

V V

Nebraska Company Seeks Raises To Improve Service

The Springview Exchange Telephone Co. recently asked the Nebraska Railway Commission for authority to increase its rates.

The company said the added revenue is needed to pay for the cost of improving service.

Virginia Company Seeks Rate Increases

The Clifton Forge-Waynesboro Telephone Co., Staunton, recently announced that the company is filing an application with the Virginia Corporation Commission for general rate increases.

Its last general increase was approved by the commission in 1950 and, since that time, the number of telephones in the Covington-Clifton Forge area has increased more than 25 per cent.

Proposed business rate increases are as follows:

	Old	*New*
One-party	$6.25	$7.00
Two-party	5.50	6.25
Rural	4.00	4.50

Residence rates proposals are as follows:

One-party	3.50	4.00
Two-party	3.00	3.50
Four-party	2.50	3.00
Rural	3.00	3.25

Proposed increases would amount to about 11 per cent of the company's present gross revenues.

The telephone company's reason for requesting this increase in rates is that all materials, taxes, wage rates and all other items of expense are continuing at the existing high level.

Since the last rate case in 1950, the company has completed installing dial telephones throughout its entire system and has spent 1.5 million dollars in expanding its facilities. The result of this has been that the average investment for every telephone has increased from slightly under $150 per telephone to slightly under $200 per telephone. During the last 27 months, for every telephone the company has gained, the company has expended $387 for capital additions.

The company's earnings on its plant investment have shown a gradual decrease, due to continued high level costs of operation and extending its service to more urban and rural areas.

Since its last case in 1950, the company's rate of return has diminished from slightly over 5 per cent to slightly over 4 per cent. When its case was

considered by the commission, it was estimated by the commission and the company that the company's rate of return would be 6¼ per cent.

V V

Nebraska Company Denied General Rate Raise

The Nebraska Railway Commission on May 21 denied the application of the Farmers Independent Telephone Co., Red Cloud, for a general rate increase of 25 cents on all classes of service (TELEPHONY, May 8, p. 30).

The order stated that the proposed increase would result in a net return of 11.2 per cent on an adjusted net book rate base of $26,622. The commission held that this return would be excessive and that the company's present revenues are adequate to pay expenses and taxes and leave a sufficient amount to enable the company to pay its debt charges, a reasonable dividend on its stock, and to provide an adequate amount for surplus.

Additional gross revenue proposed by the application was $2,247 per year, which would increase total annual operating revenue to $35,239. Expenses were estimated at $30,002 and taxes at $2,254 per year.

The company operates 559 telephones at Red Cloud and 190 service stations in rural areas of the community. It owns no rural lines. Common battery type service is provided and all company-owned lines are metallic.

V V

Missouri Companies File Several Pleas

The Missouri Public Service Commission has received the following telephone company petitions:

The application of Norman C. Gibbons, et al, incorporators of Purdy Telephone Co., and Purdy Telephone Co., for authority to issue the stock of the corporation and for certificate of convenience and necessity;

The application of W. R. Trowbridge, et al, incorporators of A&M Telephone Co., Ava, and A&M Telephone Co., a corporation, for authority to issue 1,000 shares of no par common stock and for certificate of public convenience and necessity;

The application of Golden City Telephone Co., Inc., for authority to issue note secured by deed of trust and chattel mortgage on its property.

V V

N. C. Company Financing O.K.'d

The Lexington Telephone Co. on June 18 was authorized by the North Carolina Utilities Commission to issue $100,000 worth of 6 per cent cumulative preferred stock to raise funds for continuing its expansion program. These funds also would help the company carry out plans for converting approximately $50,000 in short-term bank notes into long-term debts.

V V

Oregon Independent Gains Rate Relief

The Yoncalla Telephone Co. on June 17 was authorized by the Oregon Public Utilities Commissioner to increase rates a total of $1,367.44 annually. The company had requested raises amounting to $2,520.

For the 12-month period ending Apr. 30, 1954, the commissioner noted, the Yoncalla company earned a 3.13 per cent rate of return on a rate base of $33,375.45. The rate raises granted will provide a reasonable rate of return on the company's rate base consisting of net plant in service less depreciation plus working capital.

V V

Missouri Mutual Seeks Purchase Approval

A newly organized mutual telephone company, East Ozark Rural Telephone Co., Inc., recently asked the Missouri Public Service Commission for authority to buy Bloomsdale Local Telephone Co. (TELEPHONY, May 8, p. 35).

East Ozark said it had borrowed $194,000 from the Rural Electrification Administration to rebuild and repair the system that serves some 324 subscribers in the area around Bloomsdale.

V V

La. Company Asks Rate Relief

The Louisiana Public Service Commission was to have held a June 9 hearing on the application of the Campti Pleasant Hill Telephone Co., Pleasant Hill, for increased rates and charges.

GOVERNMENT AND BUSINESS

"If the government with the tax moneys of the citizens is going to compete with them in business, government proprietary business should be operated on an equal basis with private proprietary business, charging to government business the true costs of doing business. Government should not base its business prices on subsidized costs at the expense of the customers of private business and the general taxpayer."— WALTER H. SAMMIS, ***president, Edison Electric Institute.***

New Mexico High Court Refuses Rehearing to Mountain States

New Mexico's Supreme Court on June 8 refused a request by Mountain States Telephone & Telegraph Co. for a rehearing of the court's order of May 8 denying the company a $1,741,000 gross annual rate increase (TELEPHONY, June 12, p. 38).

The company then announced it would apply to the New Mexico Corporation Commission for an emergency interim rate increase of about 80 per cent of the abolished increase.

Meanwhile, E. C. Phillips, Mountain States' New Mexico manager, announced the company would have to recruit and train a special force of 30 to 50 persons to handle credits and refunds to customers and make tax and franchise tax adjustments on the local, state and federal level as a result of the court's action knocking out the rate increase which had been in effect under bond since June, 1953.

Mr. Phillips said that in several communities where the company's franchise tax is paid according to gross receipts, the company will have credits coming to it which will be adjusted on later payments. He added that similar procedure will be followed in subsequent payments of state and federal taxes.

V V

Nebraska Company To Be Under New Ownership

The Nebraska Railway Commission on June 3 authorized the sale of the Naponee Home Telephone Exchange to John C. Haines by the former owner, D. J. Mahin.

Mr. Haines will retain the same company name and will devote full time to the business. His son will assist with line maintenance, and Mrs. Haines will serve as switchboard operator and bookkeeper.

The agreement provides for the sale of personal and real property owned by the company, together with its franchise; the ownership changes hands on July 1.

V V

Report Georgia Independents Set Fast Pace for Service

Figures just released by the Georgia Public Service Commission show that Independent telephone companies in that state reportedly are moving at a fast rate in service improvement and extension.

A gain of 10.3 per cent in stations was recorded during the year 1953 and

(Please turn to page 34)

In any **MODERN** switchboard installation—

Photo courtesy of Stromberg-Carlson

the choice is **ACCURATE AUTOMATIC TOLL TIME CALCULATING AND RECORDING**

by **CALCULAGRAPH**

Because they quickly save many times their initial cost, CALCULAGRAPH permanent printed records eliminate switchboard detail work, speed service. Accuracy-to-the-second permits collection of all the revenue due on every call. CALCULAGRAPHS are precision instruments featuring high visibility dials, smooth silent lever action. Available in several models, they can be engineered into new equipment by your switchboard builder or easily included in your present set-up. For complete information just call or write.

CALCULAGRAPH COMPANY

HARRISON • NEW JERSEY

THE STANDARD OF ACCURACY SINCE 1892

10 new exchanges were activated over the past 12 months—almost one a month. These exchanges are in communities where none existed before. Four more such exchanges are now being built.

Of the 199 Independent exchanges in Georgia, 112 are now dial operated and 34 others are in process of conversion. Only 9.6 per cent of the Independent stations are now magneto. While there has been a steady decline in the number of companies over the past decade the number of exchanges has increased, and the gross investment has gone up more than 200 per cent.

A spokesman for the telephone companies says this progress could not have been possible without the cooperation and help of a realistic and mature-minded commission conscious of the full scope of its responsibility.

Most of the rate adjustments required to maintain the credit of the respective companies and to protect existing service standards have been disposed of as promptly as a limited and overworked staff could turn them out.

Authority to issue new securities or borrow money has not only been promptly granted, after thorough review, but in a few urgent cases members of the commission have actively assisted smaller companies obtain and expedite loans, so that improvement and expansion programs could be hurried along.

It seems to be a case of the regulatory authority and management working hand in hand to provide Georgia with communication facilities equal to the need and demand of the new and revitalized economy now sweeping across the state, one telephone industry official states.

V V

Texas Company Sold

It was recently reported that the Carbon (Tex.) Telephone Co. has been purchased by J. T. Menefee of Abilene from J. E. McGothlin, manager.

Nebraska Company Describes Financing Program

The Nebraska Central Telephone Co., Gibbon, recently described its improvement program which in the last three years has been financed through the sale of $115,000 worth of 20-year bonds and a $75,000 bank loan from The Chase National Bank of New York City.

Within the last five years the company has spent about $200,000 for service improvements, including the installation of a common battery switchboard at Gibbon in 1947, and a similar installation at its Sargent exchange last year, D. E. McGregor, company manager, reported.

The company recently completed the conversion of its Shelton exchange to dial operation—the first of a series of conversions planned for the company's six exchanges at Shelton, Gibbon, Ansley, Arcadia, Comstock and Sargent.

Nebraska Central Telephone Co. operates 2,000 telephones at these exchanges.

V V

Michigan Company Granted $2,700 Annual Rate Raise

The Pullman Mutual Telephone Co. recently received approval of the Michigan Public Service Commission to raise the rates charged its 280 subscribers $2,700 a year.

Effect of the order is to raise charges from a minimum of $1.00 for rural residence service to $1.75, and from a maximum of $1.67 for one-party business service to $3.25.

V V

Buys Two Minnesota Lines

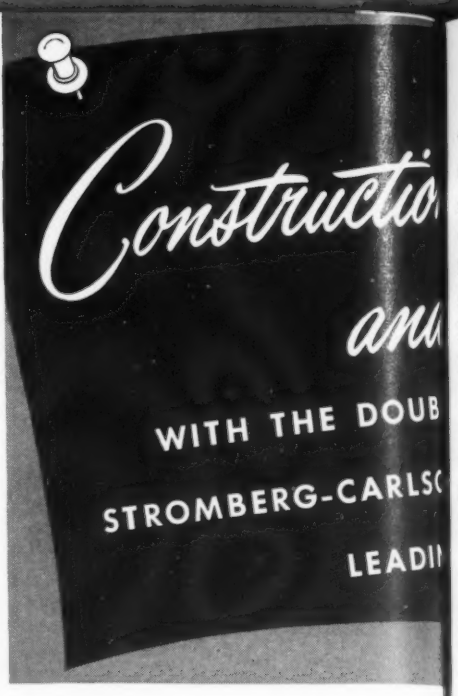
The Minnesota Railroad & Warehouse Commission on June 16 authorized the Blue Earth Valley Telephone Co. to purchase the properties of the Blue Earth 4100 Line Telephone Co., and those of the Blue Earth 2900 Line Telephone Co.

Where Does the Time Go?

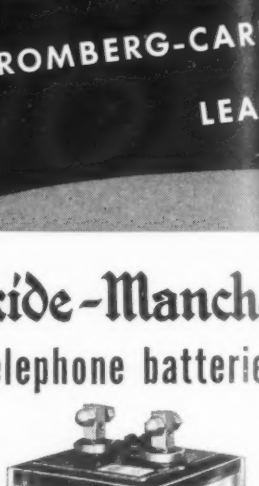
A psychology class at the University of Wisconsin has it all figured out. They estimate that the average man of 70 years has spent

- **20 years working**
- **20 years sleeping**
- **7 years taking in movies and other amusements**
- **7 years in walking and outdoor sports**
- **5 years shaving and dressing**
- **3 years waiting for someone to arrive**
- **2½ years eating**
- **2½ years smoking and chewing gum**
- **2 years playing cards and other games**
- ***1 year on the telephone***

—Executive Digest



Exide-Manchex
telephone batteries



assure positive operatio

For Central Office and Private Branch Exchange Equipment

This is proven daily in exchanges of every . . . for over 60 years Exide Batteries have serving the Telephone Industry . . . the chester positive plate with its exclusive type construction provides exceptionally life . . . latest developments on molded jars permit compact space saving install . . . heavy terminal posts with copper in provide extra conductivity for sustained age at high discharge rates . . . micropo rubber along with slotted plastic separa are impervious to chemical and electrica actions . . . plastic spacers assure plate a ment . . . for assured dependability, long and low-cost maintenance use Exide Manc

The Electric Storage Battery
Philadelphia, Pa.

1888 . . . Dependable Batteries for 66 Years . . .

←

On the page at the left is the third advertisement in the national advertising campaign of the United States Independent Telephone Association, prepared by J. M. Mathes, Inc., New York advertising agency. It will appear in the July 2 issue of *U. S. News and World Report* and the July 12 issue of *Time* magazine. A similar ad will appear in the July issue of *Country Gentleman*.

Sees Consolidation as Hope of Canadian Independents

The alternative of consolidating or dying will face several of the smaller Independent telephone companies in Ontario, Canada, when the 1954 telephone act comes into effect, a provincial government official said.

"I think Independent telephone systems will have to be of a size to be economically sound if they are going to survive," Brig. R. E. Smythe, vice chairman of the Ontario Rural Telephone Committee, told nearly 200 delegates to the 44th annual convention of Western Counties Telephone Association on June 18 at London, Ontario.

He said the time was coming when Canadian Independent telephone firms will have to install more efficient and complicated equipment and have trained staff to operate it.

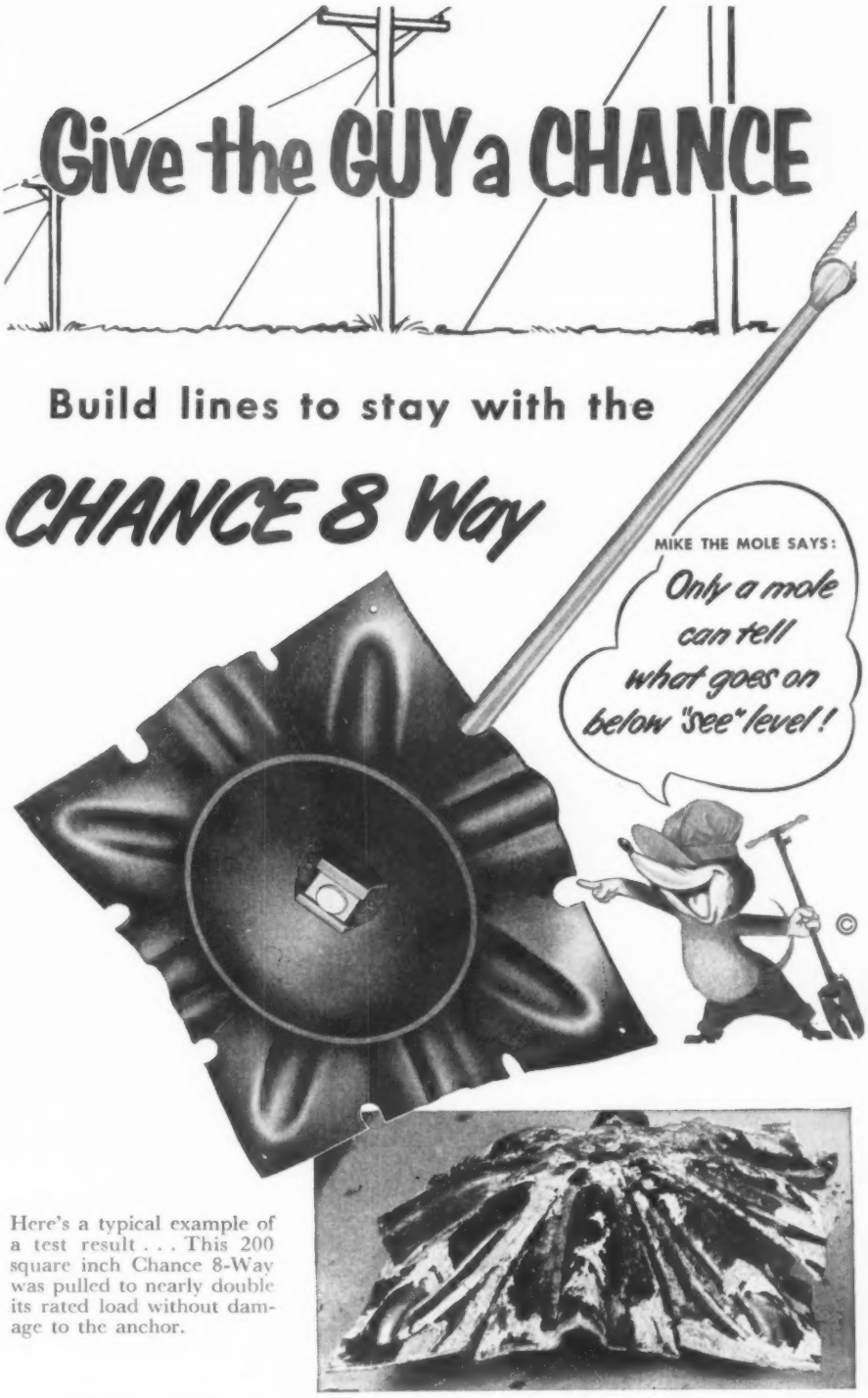
Brig. Smythe said when the telephone authority was set up, steps were authorized to assist in the training of Independent companies' personnel.

V V

» If you worry about what other people think of you, it means you have more confidence in their opinions than in your own.

OBLIGATION

"We must recognize and protect the constitutional rights of all, including Communists, but at the same time we must not be blinded to the fact that if the communist philosophy should prevail, these constitutional rights would be forever lost. We must be zealous in the protection of individual rights, but at the same time equally zealous in safeguarding our national security and our American form of government."
—WILLIAM J. JAMESON, *president, American Bar Association.*


Give the GUY a CHANCE
Build lines to stay with the
CHANCE 8 Way
MIKE THE MOLE SAYS:
Only a mole can tell what goes on below "see" level!
©

Here's a typical example of a test result . . . This 200 square inch Chance 8-Way was pulled to nearly double its rated load without damage to the anchor.

MIKE'S RIGHT! You can't tell what happens to an anchor after it's installed unless it fails—or is pulled out in a test or dug out for examination. Chance has pull-tested all kinds of anchors all over the country to see what happens when anchors are subjected to heavy loads. These tests prove that the Chance 8-Way holds far more than its rated load because the eight blades expand to form a complete pyramid shaped square—there is no wasted space between blades. The guy load is equally distributed all around the hole.

* * *

8-Ways are available in a range of sizes for every requirement from guying rural phone lines to guying heavy transmission lines. Your CHANCE Anchor Distributor can probably supply you directly from stock. SPECIFY CHANCE FOR SERVICE!

A·B·CHANCE CO·

CENTRALIA, MISSOURI
SAN FRANCISCO, CALIFORNIA

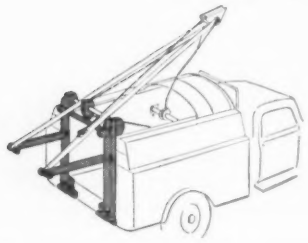
ABC INDUSTRIES

CA54-4A

Fold Up Your Derrick from Inside The Cab!

U.S. Patent No. 2,336,965

with the *Tel-E-Lect* STORAGE KIT



Derrick raised by simply engaging the winch.

Vertical position—winch rotation reversed.

Derrick is locked in operating position.

★ Saves Space
★ Saves Time
★ Saves Money

You know what a tough job it is to assemble an "A" frame derrick—and to put it away after use. Now Tel-E-Lect has a simple solution with a real dollar saving in time on the job—a saving of space on your trucks—and a saving in many hours of back-breaking and hazardous work for your men.

The patented Storage Kit fits any standard utility truck body and "A" frame derrick and it can be quickly bolted on the back of your truck by your local mechanic. The derrick will go up or down in a minute or less, entirely controlled by the man in the truck cab. Working with a double drum winch, you get live boom operation—or easily adjustable derrick elevation with a single drum winch.

The cost is only a fraction of other, more intricate derrick storing systems—and there's no rebuilding of your present equipment!

So, while you're thinking about it, drop a line to Tel-E-Lect for diagram and price. It's sensational!

Earth Boring Equipment for All Types of Trucks

Tel-E-Lect
PRODUCTS, INC.

10,001 Minnetonka Blvd.
Minneapolis 16, Minn.

PENNSYLVANIA MEETING

Continued from page 30

Edward Flannery of Canton
George Ruhl of Lewisburg
Gerald Clover of Sayre
Willard Gottschall of Lansford
L. C. Hyle of Pine Grove

Western District:

F. A. Miles of New Bethlehem
Robert Parker Jr. of Transfer
Charles R. Fausold of Kecksburg
R. B. Scott of Waynesburg
LaVerne Grandy of Johnstown
George Evert of Meadville
K. B. Schotte of Kittanning
Ralph Forsythe of Butler
B. V. Cobler of Knox
Arthur Watson of Oil City
A. M. Gibson of Sheffield
A. N. Seward of Meadville

Mr. Payne said the small company committee would place major emphasis on (1) survey work; (2) engineering; (3) accounting, and (4) obtaining sources of capital.

He went on to say:

"It is my firm belief that most of our difficulties can be attributed to poor management. I say this because if competent management—and by this I mean management that is fundamentally in the telephone business, not having the telephone business as a side line—will endeavor to see that the property is providing good, adequate service, at a rate substantial enough to provide the type of return necessary, then financing can be arranged to expand and modernize the system.

"It would seem that the owners of the control of any company—whether that control be the management exclusively or a majority stockholder—should be anxious to safeguard their investment either by effecting proper management or consolidating—merging or selling to safeguard whatever equity they have in the company."

Warren B. Clay of Hutchinson, Minn., president of the United States Independent Telephone Association, told what the more than 300 telephone men on USITA committees are doing on behalf of the industry. Mr. Clay touched briefly on the following industry problems: The lag between rate application and final decision; the need for salesmanship; "missing links" in the industry (companies whose service is below par); the less optimistic outlook on the minimum hourly wage question; the question of pole relocation costs as related to the federal highway act now being drafted; the progressively friendlier feeling between the Rural Electrification Administration (REA) and the Independent industry, and the matter of privately operated intra-system microwave and leased radio-relay facilities.

In closing, Mr. Clay quoted from the scroll given to President Eisenhower

when the 50-millionth telephone was installed. He read as follows:

"Telephone service was born in America. Here in the climate of freedom it has been most widely developed and used. In ever-increasing measure it has contributed to the unity, strength and progress of the nation. This instrument, serving our Chief Executive and Commander-in-Chief, symbolizes the constant effort of telephone people to provide this country with the best telephone service in the world.

"As representatives of telephone men and women throughout the United States, we pledge anew the determination of all to serve the nation, in peace and war, to the utmost of our ability."

Opening the second day's session, was an address by Dr. Richard Gerstell, director of the Pennsylvania Council of Civil Defense, Harrisburg. Adding to what Mr. Shepherd had said earlier, Dr. Gerstell stated that blast and heat are the big dangers in a hydrogen bomb attack. However, he said, if we are prepared, and do pitch in, we can come through.

He also informed the audience that lingering radio-activity — such as is spread by airborne particles or contaminated objects on the ground—may be removed from one's skin merely by washing with soap and water.

"What's Right With America?" was explained by Rep. Carl T. Curtis, congressman from Nebraska. He gave the following reasons why our country is great:

(1) The processes of our government are sound and good.

(2) Our country has a genius for production.

(3) We have freedom.

(4) We have a wide-spread religious faith, and a Christian basis for living.

(5) We have a system of representative government—a government of law and not of men—the men in power (by election or appointment) are limited by law in the extent of their power—no room for tyrants.

(6) We have protection of property rights.

(7) We have a workable economic system—the right to select and choose, to buy or do—the profit motive system (freedom's way of doing business).

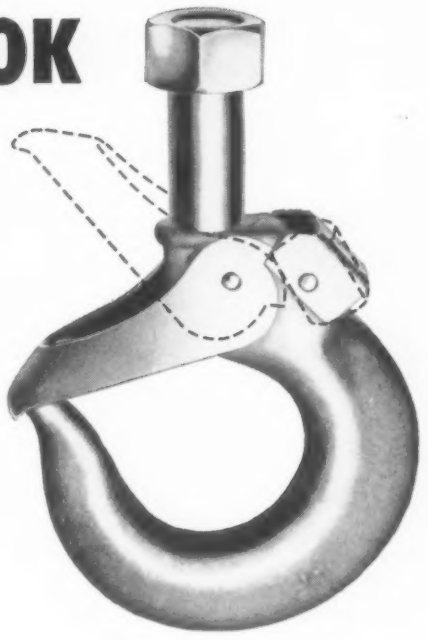
A panel discussion of "Today's Problems" closed the formal program. K. B. Schotte was moderator. W. E. Dickey and W. A. Black, both of Butler, handled plant problems; H. W. Rasher of Harrisburg, problems in accounting; Paul S. Darling, commercial problems, and Pearl N. Landefeld, those in traffic.

Franklin Smith of Pocono Lake was elected president of the association. First vice president is K. B. Schotte of Kittanning, and second vice presi-

Look at the Safety and Convenience Features in

COFFING'S NEW

SAFETY HOOK



You are invited to compare this new Coffing Safety Hook, and see for yourself its many advantages — in safety to men and equipment, in convenience and ease of use.

POSITIVE LOCK under spring tension securely holds the latch in place.

NO SIDEWAYS MOVEMENT POSSIBLE, because latch fits snugly over point of hook.

HIGHER TENSILE STRENGTH than any other hook of its size. Has drop-forged, heat-treated alloy steel construction.

NO RUSTING OR CORROSION to hinder use, because the hook is cadmium plated.

EASILY RELEASED — HELD OPEN — Slight pressure on the release unlocks the latch Spring tension on the release also holds the latch open.

LARGE THROAT OPENING allows full and unobstructed use of entire area inside the hook

AVAILABLE FOR BOTH NEW AND OLD COFFING HOISTS

The Safety Hook is available on new Coffing Hoists you order, and you can also place it on Coffing Hoists already in service . . .

Send today for literature just published telling all about the outstanding new Coffing Safety Hook — just ask for Bulletin T6SH.

SAFETY-PULL RATCHET LEVER HOISTS

Models RG and RTG Coil Chain — Models AG and ATG Roller Chain

CHALLENGER SPUR-GEAR HOISTS

½- and 1-ton models

COFFING HOIST COMPANY

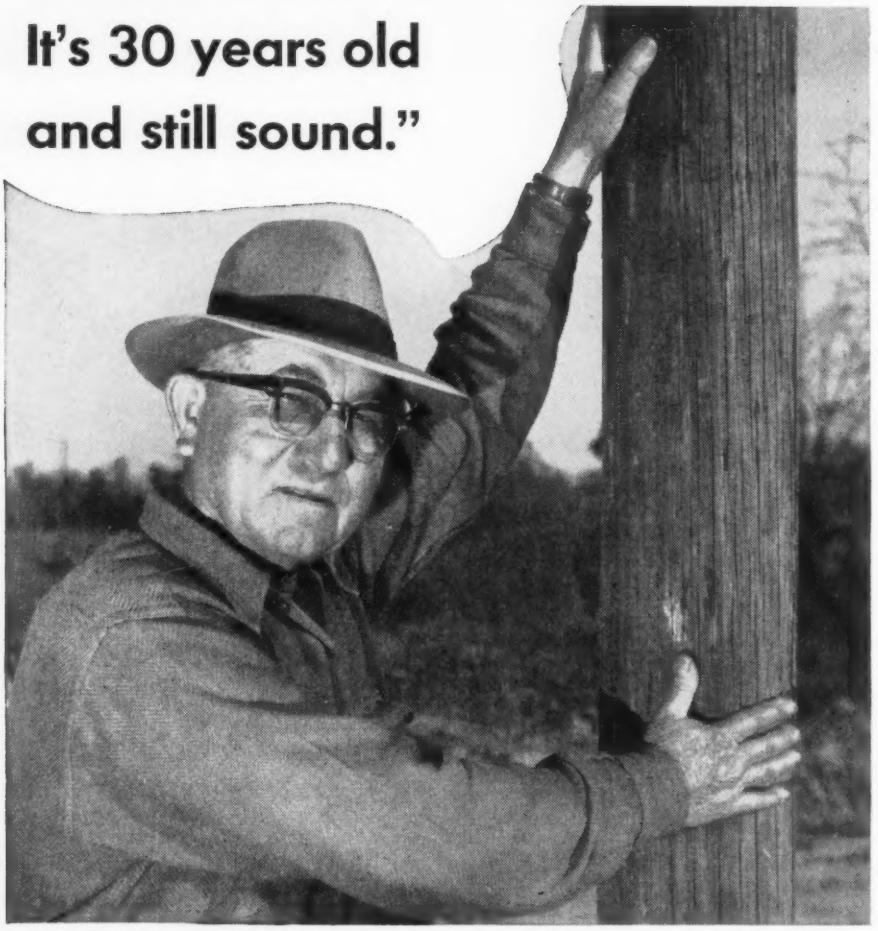
DANVILLE, ILLINOIS

Quik-Lift Electric Hoists • Hoist-Alls • Mighty-Midget Pullers • Spur-Gear Hoists
Differential Chain Hoists • Load Binders • I-Beam Trolleys

Sold By Distributors Everywhere

Line Foreman Praises Koppers Poles:

"Here's what I call a good pole. It's 30 years old and still sound."



W. E. DeVanie, Line Foreman, Maintenance and Construction, Southwestern Gas and Electric Co., Texarkana, Texas. This Koppers Pole is part of a transmission line erected in 1924.

● W. E. DeVanie, shown here, knows all about poles. For 36 years he has been doing maintenance and construction work for the Southwestern Gas and Electric Co., Texarkana, Texas. In 1924, when he was made Line Foreman, one of his first assignments was to supervise the construction of a 7-mile transmission line.

Here's what Mr. DeVanie says about this line: "Only Koppers Pressure-Creosoted Poles were used. During the 30 years since this line was built, some poles have been hit by lightning. Others have been removed so that longer poles could be installed at road crossings. I can't remember having to remove a single pole because of decay."

This shows the kind of service utility companies are getting from Koppers Pressure-Creosoted Poles. By lasting so long, these poles cut maintenance and replacement costs. They make line operation more efficient as well as more economical. Write for prices and further information on Koppers Poles.

KOPPERS COMPANY, INC.

KOPPERS®

PRESSURE-CREOSOTED POLES

Wood Preserving Division
Pittsburgh 19, Pennsylvania

dent is Henry Y. Smith of Columbia. George B. Rudy Jr. of York remains as treasurer and A. C. Herbert as executive vice president. Miss M. Ethel Cunningham is secretary.

Directors in addition to the officers are: C. E. Eaby of Ephrata; A. M. Gibson of Sheffield; John M. Horn of Vandergrift; Harold G. Payne of Export; R. B. Scott of Waynesburg; A. N. Seward of Meadville; L. F. Shepherd of Erie; A. J. Sordoni Jr. of Dallas; J. K. Stoltzfus of Birdsboro, and Lester R. Thurston of Harrisburg.

IN THE NATION'S CAPITAL

Concluded from page 19

instead of the old 10-word limit). A more liberal word allowance will also continue for night letters, with 50 words for the minimum charge, in place of the old 25-word limit. The once-in-awhile user will benefit by the recent excise tax reduction and by continuance of the greater word allowances in messages, according to a Western Union announcement. There is also a promotional feature designed to stimulate the use of additional words beyond the basic 15 in telegrams, through a downward adjustment of the per-word charge for additional words.

V V

Incorporate Kansas Company

The office of the Kansas Secretary of State recently granted a state charter to the Colwich Telephone Co., Inc., Bentley. The company was formerly known as the Bentley Telephone Exchange. Herald Osburn, owner, is the resident agent; capitalization was listed as $50,000.

V V

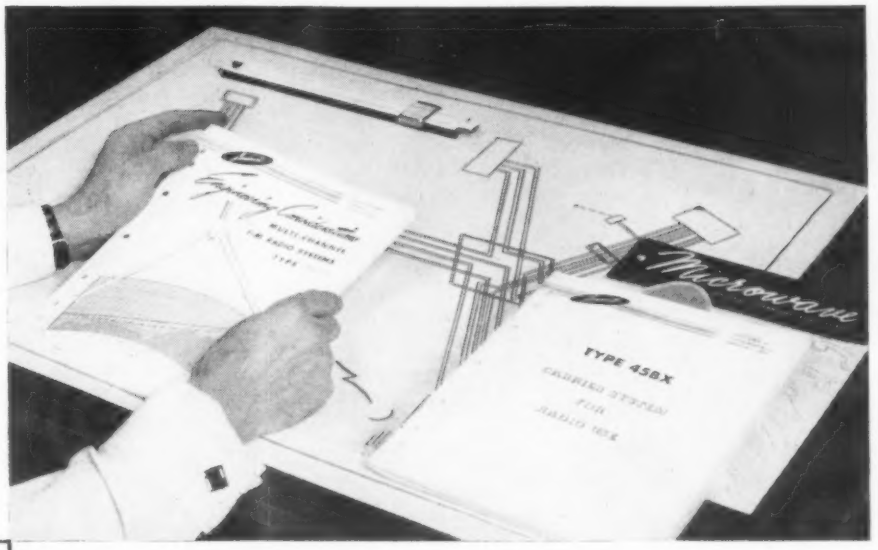
Asks One-Exchange Rate Raise

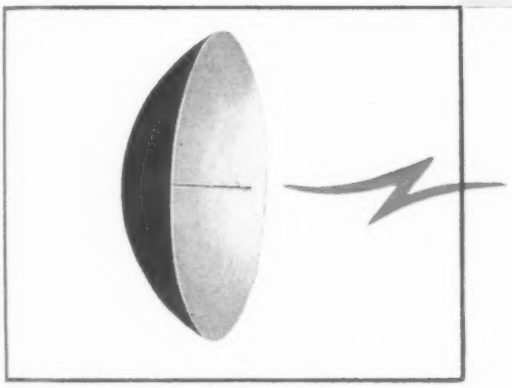
The Wisconsin Public Service Commission was to have held a June 23 hearing on the application of the Headwaters Telephone Co., Inc., Rhinelander, for authority to revise rates, rules, and regulations at its Lake Tomahawk exchange.

V V

"We have, for many years, been opposed to the surrendering of county rights to the state, or of state rights to the federal government. Every such surrender of rights leads one step further to a socialistic form of government, wherein everything is controlled from one central point. This nation has progressed as it has because of the right of the people to make their own decision in all matters. Surrendering of those rights is a surrendering of liberty."—Humboldt (Iowa) *Republican*.

Bridge the gaps on your toll routes





with a TYPE 45BX CARRIER SYSTEM for use with microwave.

The Lenkurt Type 45BX Carrier System opens up new sources of revenue which have been unprofitable or impractical with wire-line or cable equipment. With its relatively low initial cost, simple installation, and easy maintenance, certain gaps and extensions can now be bridged—practically and *profitably*.

The 45BX system uses the same basic miniaturized components and versatile plug-in assemblies as other Lenkurt 45-class systems. Since all units are easily accessible from the front, maintenance, repair, and testing can be done simply and conveniently.

And you save costly space, without crowding, because 24 to 36 channels with common equipment mount on a single 11'6" rack occupying only about 1.39 sq. ft. of floor space.

It will *pay* you to get the facts on the Type 45BX for use with microwave. Write us today—we'll send Circular TT-45BX-P8.

FACTS ON THE 45BX SYSTEM FOR THE TECHNICALLY MINDED:

When applied to radio links having a suitable modulation band-width, two 24-channel groups can be frequency-stacked to produce a 48-channel system within the band of 40 to 264 kc, while a 24-channel system requires a spectrum of only 40 to 140 kc.

*

An automatic channel regulator controls circuit net losses within less than ± 1 db.

*

Available for use with either built-in "out-of-band" signaling for dialing or ringdown, or externally applied "in-band" signaling for 1000/20 cycle a.c. ringdown.

*

Inter-channel crosstalk and inter-modulation products are restricted to better than toll quality minimum.

Manufactured for

AUTOMATIC ELECTRIC

Originators and Developers of the Strowger Step-by-Step "Director" for Register-Sender-Translator Operation . . . Machine Switching Automatic Dial Systems

Makers of Telephone, Signaling and Communication Apparatus • Electrical Engineers, Designers and Consultants

Distributors in U. S. and Possessions: AUTOMATIC ELECTRIC SALES CORPORATION
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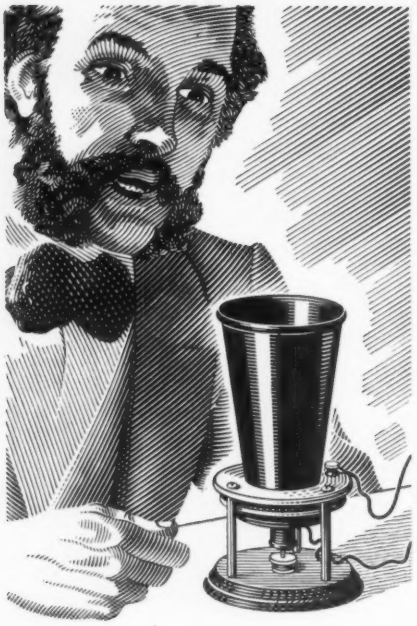

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ABC OF THE TELEPHONE

Continued from page 22

opening the shunt path shown in heavy lines in *Fig. 5*, operates relay (M1).

The operating path for relay (M1) is from the battery, through the winding of relay (M1), the operated 1-2 bottom contacts of relay (T1), over the dotted line to the junction point, and then through the normal 5-3 bottom contacts of relay (ST) to ground.

Once again, the release of relay (C3) will operate relay (C1). However, at this stage the circuit is through the operated 1-2 top contacts of both the (T1) and (M1) relays (see *Fig. 6*).

STAGE 5:

Relays (C2) and (C3) operate and, as previously described, relays (C1), (C2) and (C3) release. When relay (C2) releases, relay (T) re-operates, as shown in *Fig. 4*. When relay (C3) releases, relay (M) re-operates and also (C1) operates.

STAGE 6:

Again relays (C2) and (C3) operate and then relays (C1), (C2) and (C3) release. The release of relay (C2) releases relay (T). Relay (T1) is released by the shunt placed across its winding, as shown with a heavy line in *Fig. 6*.

The release of relay (C3) removes ground from the "TR" lead, and releases all (R1) relays on this circuit or any associated circuits. A review of *Fig. 1* will reveal that the possible sources of ground on the TR lead are as follows:

(1) 1-2 top contacts of the operated (C3) relay.

(2) 3-4 top contacts of normal (M1) relay.

(3) 3-4 top contacts of operated (T1) relay.

(4) 3-4 bottom contacts of operated (ST) relay.

At the point in stage 6 to which the circuit has been traced, it will be noted that relay (ST) is normal: relay (T1)

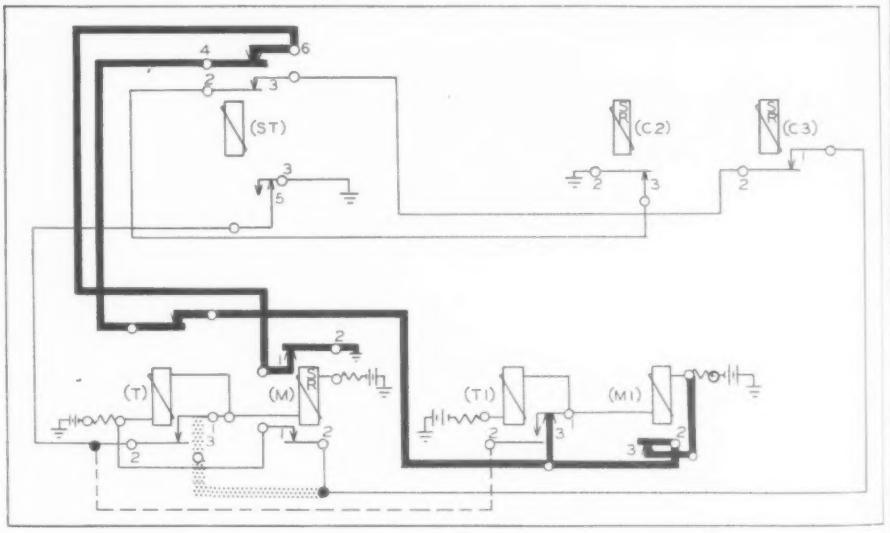


Fig. 5

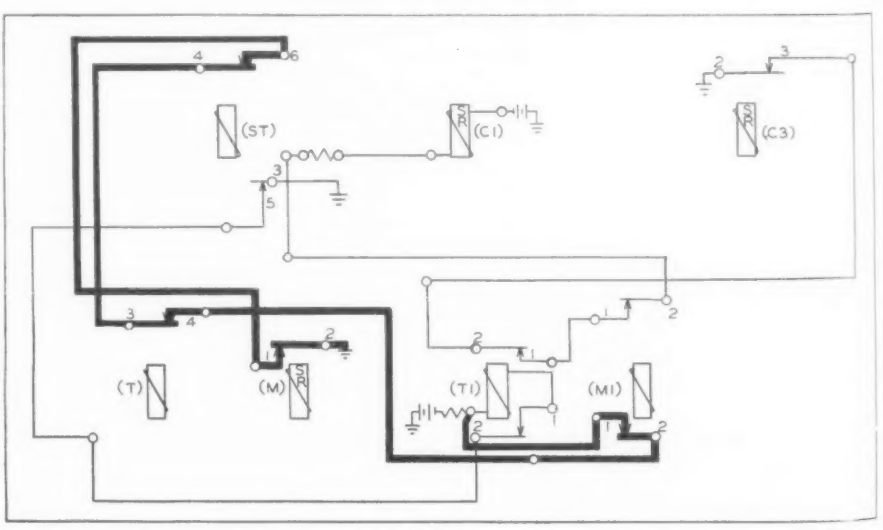


Fig. 6

has just released, and relay (M1) is operated. Therefore, at this stage, the final ground on the "TR" lead is removed when the top 2-1 contacts of relay (C3) break. Thus, the (R1) relay or relays will release.

Relay (M) releases when the 2-1 bottom contacts of relay (C3) release. By referring to *Fig. 5*, it will be seen that the source of ground, which at this time is holding relay (M1) operated, is removed when the top 1-2 contacts of relay (M) break. As a result, relay (M1) releases and this completes the cycle of the timing circuit.

As was stated in the circuit description, if the (R) relay in the line circuit is re-operated, the (ST) relay will re-operate and the timing circuit will re-cycle—that is, re-start the timing interval—to provide a full time period from the end of the last ringing impulse on any unanswered, abandoned call. A review of *Figs. 2, 3, 4, 5 and 6* will reveal that the basic operating paths of all the relays at any step in the cycle of the timing circuit are through *normal* contacts of the (ST) relay.

In *Fig. 1*, approximately in line with the ring lead, symbols that look like tiny flags are shown on both the "ST" and "TR" leads. These symbols indicate that the leads multiple to any associated circuits.

As an example, the timing circuit discussed in this article could serve a maximum of 10 line circuits. Thus, the (ST) relay of the timing circuit would operate when any (R) relay in the group of 10 circuits was operated.

(TO BE CONTINUED)

V V

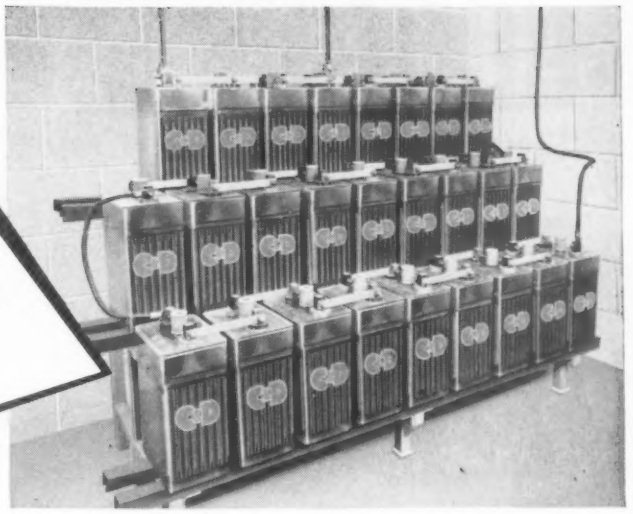
Seeks Stock Issue Approval

It was recently reported that California Water & Telephone Co., Monrovia, has asked the California Utilities Commission for authority to sell 80,000 shares of new preferred stock at $25 a share.

V V

» Secretary of Commerce Weeks recently said, "Free, private enterprise is an economic system of the people, by the people, for the people. It is the instrument invented, developed and used by the people themselves to reward themselves for their own individual effort and to give themselves the best in goods and services. . . ." The secretary went on to say that, in the vast majority of instances, private enterprise can do a better job than government in keeping "the average family well-fed, well-clothed, well-housed, and provided with those extras which give us here the really abundant life."

At The Lorain Telephone Company



Telephone battery installation at The Lorain Ohio Telephone Company, Sheffield Lake Exchange. The 26 Plasti-Cal (lead-calcium) Cells have a 120 A. H. capacity.

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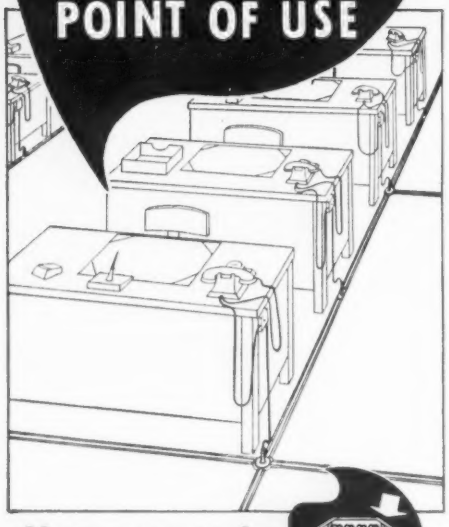

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PLANT MAN'S QUIZ

by RAY BLAIN, Technical Editor

Q. What is the new L3 carrier system and how is it used?

A. The L3 carrier system has triple the telephone capacity of any cable transmission system now in use and a band-width double that of conventional video channels. Its components have been under development by the Bell System since nearly the end of World War II.

This system makes it possible to transmit 1,800 conversations at the same time over the same pair of tubes without interference. It is also possible for two tubes—one in each direction—to carry two TV programs and 600 telephone conversations simultaneously.

This is the first carrier system on which both television programs and telephone conversations can be sent together over a pair of coaxial cable tubes. It will also serve a most important adjunct to the customer dialing long distance switching systems that are gradually being added to key cities in the Bell System's network.

• • •

Q. Will you please give us an elementary and non-mathematical description of the fundamentals of the telephone transmission system?

A. It is realized that this may prove a difficult and controversial subject, but we shall attempt to do our best to answer your question.

Essentially, any electrical transmission system will consist of three parts: A sending device, a medium over which the energy can be transmitted, and a receiving device for converting electrical energy into some usable form. In an electrical power transmission system the sending device may be the generator, the transmitting medium the high voltage line with transformers at each end, and a motor, lamp or other device at the receiving end to convert the electrical energy into some useful form.

When we speak of transmission in the communication field, we generally refer to the process of sending signals electrically from one point to another over a suitable circuit or channel.

These signals may vary in type such as dial pulses, ringing, telegraph, speech, music or TV. The entire system used to send and reproduce any of these signals or a combination of them, at a suitable volume and without objectionable distortion, is generally referred to as a transmission system.

The equipment at the sending end, in response to an impulse of some type, either produces or controls an electrical current, the connecting circuit carries this current and the receiving equipment operated by the current produces the desired signal.

In a simple telephone system, the sound waves set up in the air by the speaker, strike the diaphragm of the telephone transmitter and vary the resistance of the current path through the carbon granules. This action causes a variation in the current, which alternately aids and opposes the pull of the permanent magnet on the receiver diaphragm. The resulting motion of the receiver diaphragm generates a new sound wave that is similar to the original impulse at the sending end of the line.

The entire physical plant of any telephone system is provided for the specific purpose of permitting any two customers, wherever they may be, to talk to each other satisfactorily. Since the length of a telephone circuit may differ for each call it becomes a design and maintenance problem to provide facilities which will accomplish this purpose and care for the varying distances that separate the sending and receiving instruments of the connections.

Instruments now available make it possible to measure the conditions under which it will be possible to carry on a satisfactory conversation. However, it is sufficient to state briefly that the received signal must be loud enough to be heard comfortably. It must also resemble the originating signal to such an extent that voices may sound natural and words similar in sound may be distinguished.

Moreover, the signal must not be interfered with by other signals during transmission and reception. Essentially these requirements are adequate volume and quality, and freedom from objectionable crosstalk and noise.

Schriber Named President of Wis. Manufacturers Group

The Wisconsin Manufacturers Association recently elected their youngest president in 43 years as Rufus K. Schriber Jr., president of United States

R. K. SCHRIBER Jr.

Motors Corp., Oshkosh, took over the leadership of the association and its widespread program.

Forty-year-old Schriber, in addition to being president of United States Motors Corp., heads two export firms, United States Motors Americanas, Ltd., and United States Motors International, Ltd. Also, he is vice president and director of the Morgan Co., Oshkosh.

V V

"If we are interested in the survival of our way of life, the average American must be made intelligent in regard to our economic system . . . in America, the job is to preserve incentives among all groups."—EARL C. BUNTING, *managing director, National Association of Manufacturers.*

R. F. KESSINGER, personnel manager of General Telephone Co. of Kentucky, recently sent TELEPHONY the above photo of a makeshift telephone which was formerly used in the Selective Service Office at Booneville, Ky., and now is replaced by a dial telephone. The instrument was made out of an old table model radio cabinet and had a monophone handpiece. Its cord, being of the electrical appliance type, enabled it to be placed in the office wherever there was a telephone outlet.

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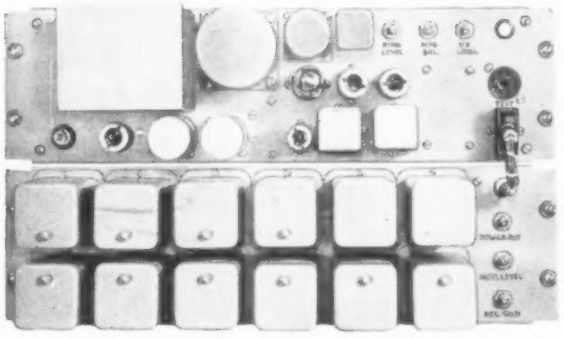

Power Supply-Signaling-Termination Unit
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FM Transmitter-Receiver
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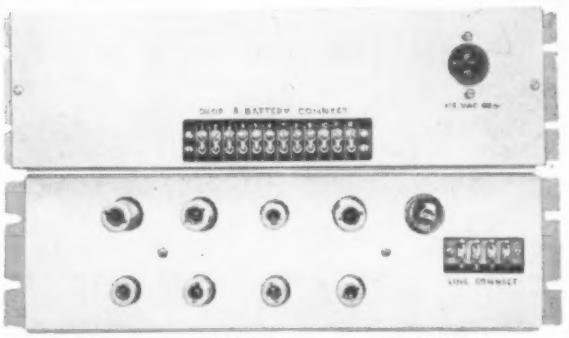
$1180. per Complete Channel

(Includes office terminal shown above and remote terminal similar in appearance but not illustrated.)



OFFICE TERMINAL – REAR VIEW

Type S-1 Subscriber Carrier

We've commenced full-scale production of S-1 Subscriber Carrier. Deliveries will be in full swing before the end of July.

Let us clarify pricing and ordering information: Price remains $790 per carrier channel. Careful and complete testing has proven desirability for separate combination power supply-signaling-termination unit. Price is $390 per channel.

All orders will be filled in the order received and may be placed with Graybar or direct if desired. All McElroy equipment is sold on 30-day trial and carries one year guaranty on components.

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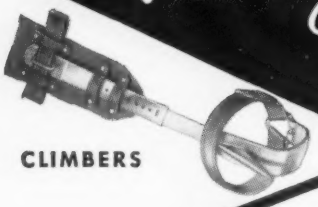

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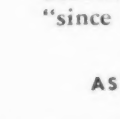

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INDUSTRIAL LADDERS — A complete catalog of its line of industrial all-aluminum and wood ladders has been issued by Duo-Safety Ladder Corp. The catalog illustrates and describes the company's stepladders, single ladders, extension ladders, sectional ladders, folding ladders, and convertible ladders. Also described are scaffolds.

Of special interest to telephone companies is a section on telephone and utility ladders, pike poles and ladder safety shoes. Request HL 191.

• • •

STORAGE BATTERY MAINTENANCE—Publication of a new eight-page pocket-sized booklet on storage battery maintenance has been announced by Exide Industrial Division of The Electric Storage Battery Co. The booklet breaks down battery care to seven basic rules, each emphasized with a catchy cartoon treatment and a minimum of explanatory text.

Measuring only 4½ inches by 7 inches, the booklet is particularly suitable for distribution to maintenance personnel and others who might have to deal with batteries. According to the company, the lively presentation makes the booklet both useful and interesting to anyone associated even indirectly with batteries. Request HL 192.

• • •

GROUND RESISTANCE TESTERS —Associated Research, Inc., has released a booklet on its line of Vibroground testing sets to measure resistance of man-made grounds. Following are descriptions of the various sets manufactured by the company:

Model 251—Ranges: 0-12.5, 0-125 and 0-1250 ohms. Shipped complete with batteries, ready to operate. All-steel, wrinkle-finish case with removable lid. Leather carrying handle. Size: 6 inches x 9 inches x 8½ inches. Weight: 17 pounds.

Model 255 — Ranges: 0-3, 0-30, 0-300, 0-3,000 ohms. Other specifications same as Model 251.

Model 259 — Ranges: 0-3, 0-30, 0-300, 0-3,000 ohms. Designed for use in hazardous locations designated as Class 2, Group F and G locations. Other specifications same as Models 251 and 255.

Model 263A — Ranges: 0-1, 0-10, 0-100, 0-1,000 ohms. Power source: eight standard No. 2 flashlight batteries. Size: 9 inches x 6 inches x 6½ inches; all-steel wrinkle-finish case.

Model 243A—Range: 0-30,000 ohms per cubic centimeter. Power source: eight standard No. 2 flashlight batteries. Spare vibrator built in. Probe: steel rod with handle and replaceable screw-in tip. Spare probe tip included. Harness: wide, heavy webbing for comfort and long field life. Size: 9 inches x 6 inches x 6½ inches. Weight: 12½ pounds.

Model 257 — Ranges: 0-3, 0-30, 0-300, 0-3,000, 0-30,000 ohms. Complete with batteries. Size: 12¼ inches x nine inches x 10 inches. Weight: Approximately 20 pounds.

Model 258 — Ranges: 0-4, 0-40, 0-400, 0-3,000 ohms. Complete with batteries. Size: 12¼ inches x 9 inches x 10 inches. Weight: Approximately 20 pounds.

Test Kit: Vibrogrounds remain unaffected by auxiliary probe or lead resistances and any type leads or prods may be used. However, test leads and

(Please turn to page 48)

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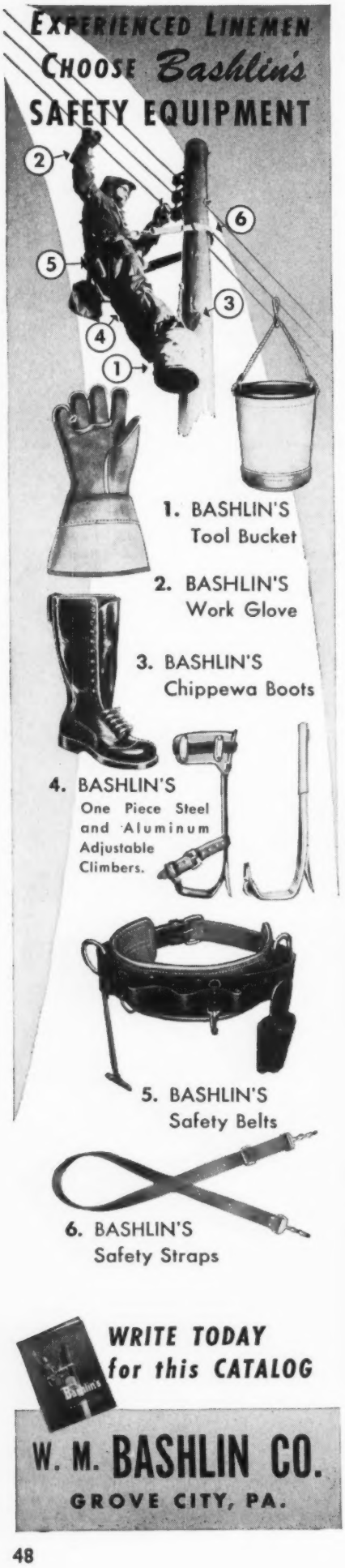

prods are available for use with Models 257, 258, and 263A.

Specifications, Model 7105 Test Kit:

Four—Eighteen inch heavy duty specially formed reference rods.

Two — Test leads — 20 feet long, marked at 5 feet intervals.

Two — Test leads — 50 feet long, marked at 5 feet intervals. Specify length desired.

Test Kit (Model 7104) is a set of leads and reference ground rods for use where testing does not require special lead lengths. Kit consists of: two copper-clad steel, T-shaped reference ground rods, 18 inches long; one test lead 40 feet long; one test lead 20 feet long; one test lead 5 feet long; durable case to contain complete kit.

Specially-formed ground rods may be driven or inserted by hand. Heavy-duty terminals, with wing nuts.

Color-coded test leads are kinkless, flexible, rubber-covered. Spade terminals at both ends. Request HL 193.

• • •

PREFORMED PRODUCTS—A brochure describing its various preformed products for the telephone industry has been prepared by Preformed Line Products Co. Among the items covered are splints and ties used to secure telephone wire to insulators, guy grips, line guards, messenger strand splices, dead-guy links, lashing rods for lashing cable to messenger strand, deadends for messenger strand, and dead-ends for plastic cable. Request HL 194.

• • •

MICROWAVE SURVEY—Microwave Services, Inc., communications engineers, announces the availability of a new informational brochure. The brochure describes all the major methods including new techniques being used in microwave survey work, and contains timely, pertinent data on microwave coordination, economics of microwave, and application of high power relay systems for long range transmission. Request HL 195.

• • •

POLES—The Dierks Lumber & Coal Co. has issued a folder on their Southern pine poles, posts and lumber which is pressure-treated with pentachlorophenol (Penta). Request HL 196.

• • •

DYNAMOMETER — The Dillon dynamometer used for setting guy wire tension, measuring sag in telephone line wires, and other uses in the telephone field is described in a folder released by W. C. Dillon & Co. Features of the dynamometer listed in the brochure are:

(Please turn to page 50)

P. J. McGANN (left), vice president of International Standard Electric (ISE) Corp., an associate of International Telephone & Telegraph Corp., receiving the International Advertising Association's (IAA) award for his company's excellency in export advertising. ISE took top award in the field of electric appliances and hardware. The presentation of the plaque was made by PAUL R. KRUMING (right) recently at the IAA annual convention meeting at the Hotel Plaza, New York. The award-winning advertisement, with the headline "Every Type of Telephone Cable From One Source . . . ISE!" was prepared by J. M. Mathes, Inc.

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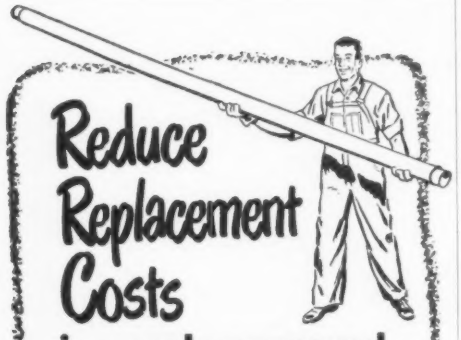

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V V

Bruce Quisenberry Joins Automatic Electric Staff

Automatic Electric Co. recently announced the appointment of Bruce Quisenberry, formerly chief of the office of technical liaison of the U. S. Army Signal Corps, as assistant director of publicity, effective May 24.

In his new position, Mr. Quisenberry will work closely with the company's director of publicity, H. E. Clapham, undertaking various assignments relating to publicity as well as public and personnel relations.

A native of Joplin, Mo., Mr. Quisen-

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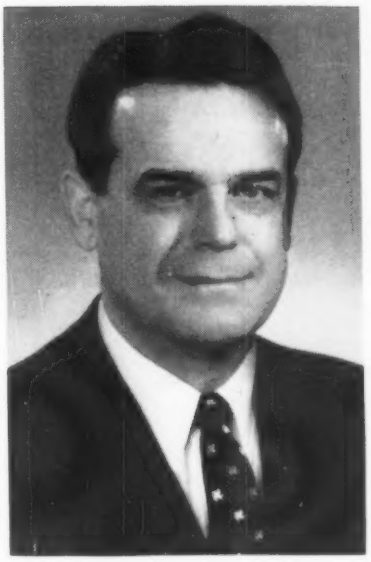

BRUCE QUISENBERRY

berry studied at the University of Missouri, University of California (Los Angeles), Yale, and the American University in Washington, D. C. He brings to Automatic Electric a background of varied experience in public relations and communications work, much of it acquired during 12 years of association with the Signal Corps. Prior to his work with the Signal Corps he was engaged in various types of sales, promotional and publicity activities.

Mr. Quisenberry entered the army as a private in 1942. Upon graduation from Officer Candidate School in 1943, he was appointed a special assistant to the director of military and civilian personnel at the Signal Corps training center at Fort Monmouth, N. J. In 1944, he was assigned to overseas duty as an assistant G-1 (personnel) in the China theater of operations, where he remained until the war's end.

After receiving his discharge with the rank of major, Mr. Quisenberry was named chief of the Office of Technical Liaison at Signal Corps headquarters in the Pentagon, in which office he handled work of a public relations and communications nature. He received an Army citation for meritorious civilian service in that capacity, which he received upon terminating his association with the Signal Corps. The citation singles out for special mention Mr. Quisenberry's suggestion for improving the public relations phase of the government's personnel program—a suggestion adopted in part by the Hoover Commission and the Civil Service Commission.

V V

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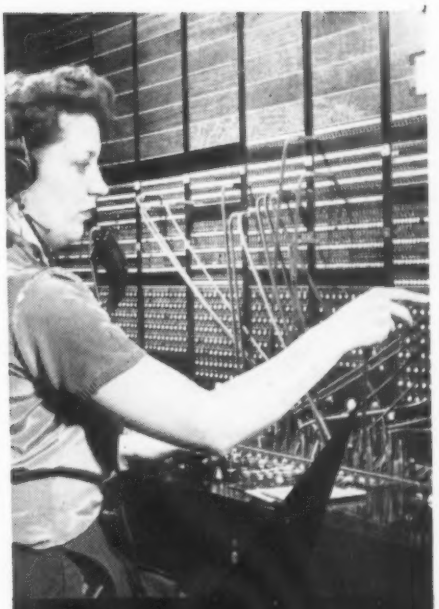

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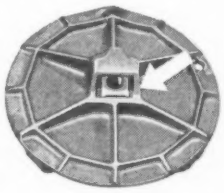

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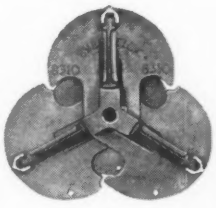

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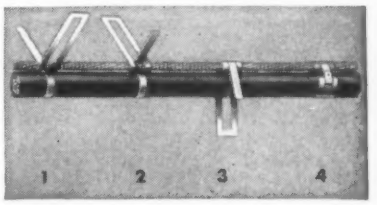

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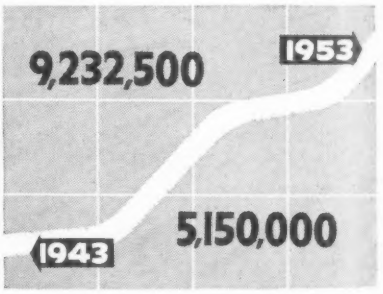

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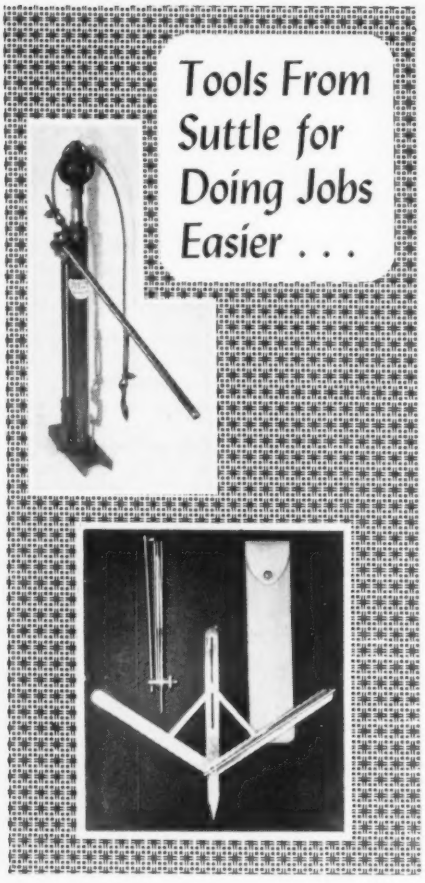

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Tele-Wire Supply Co., Inc.	—
Telkor, Inc.	—
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Texas Creosoting Co.	53
Thompson Chemicals Corp.	—
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United States Motors Corp.	—
United States Steel Corp. American Steel & Wire Co.	—
United States Steel Corp. Coal Chemical (Div.)	—
Vulcan Electric Co.	—
Wavell Showcase & Fixture Co.	—
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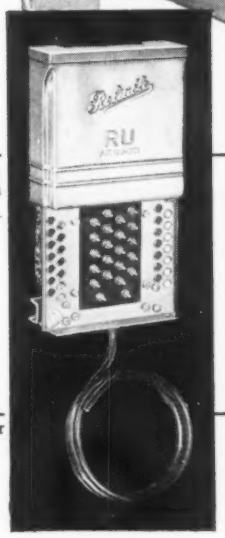
RELIABLE "RU"

REMEMBER THIS CODE—

— and, Mister Boss, you will have unprotected cable terminal efficiency second to none. The Reliable "RU" is simple, rugged and weather-proof, which should give you every thing you want in a terminal, all in this one field-proved unit. Yes, it's been in the field for many years, but has been under constant redevelopment and redesign since it was introduced. The latest improvements include a new cable soldering nipple and expendable cable guard, a new cable chamber lock, improved guide rings, new type gaskets for perfect sealing, and others. It's easy to install, simple to wire and practically maintenance-free. Remember the code — "RU" — and you can't go wrong.

RELIABLE ELECTRIC COMPANY
3145 Carroll Avenue
Chicago 12, Illinois



Capacity	Height Overall	Stub Data	Shipping Wt. Each Pounds
6 Pair	11"	Less Stub	4
		With 6' Stub	7
11 Pair	11"	Less Stub	4½
		With 6' Stub	7½
16 Pair	12½"	Less Stub	5
		With 6' Stub	9½
26 Pair	16"	Less Stub	8
		With 6' Stub	14

Furnished with 6 ft. No. 22 AWG double wrap paper lead covered cable.

Reliable

Telephone Protective and Terminal Equipment for all Station, Line and Central Office Needs.

OVER 45 YEARS' SERVICE TO THE UTILITIES

電話書

ANCIENT CHINESE PROVERBS PROVIDE WESTERN MAN WITH A VAST TREASURY OF WISDOM

Number seven

七.

of a series

Last night I thought over *a thousand plans* but this morning I went my old way

"Next year we ought to do something about making our telephone directory better and more profitable."

Many independent telephone executives, having just completed a frantic and unprofitable issue of their directory, have found themselves thinking along these lines. But, somehow, this thought is lost in the maze of normal day to day duties. Suddenly the realization dawns that a whole year has elapsed – and it's directory time again. The executive finds the company no better equipped personnel-wise or time-wise than it was the preceding year. Consequently, in all probability, the upcoming issue of the directory will be no better and certainly no more profitable than its predecessors.

Nearly 500 independent telephone companies across the nation have found a practical and profitable solution to this annual problem. Today, these companies which serve more than 4400 communities employ our Complete Directory Service Plan. As a result, their subscribers now receive accurate, attractive directories. In addition to maintaining favorable subscriber relations, these directories have shown increases in net revenue to the telephone company of as much as 1300% the first year our plan was in effect.

Don't continue to "Go your old way." Take advantage of the complete service offered by our company. Get complete information from our nearest representative.

GENERAL TELEPHONE DIRECTORY COMPANY

Des Plaines, Illinois	San Angelo, Texas	Long Beach, Calif.	Spokane, Wash.
1800 Busse Highway	110 South Taylor St.	604 Pine Avenue	N. 108 Washington
VAnderbilt 4-2164	Telephone 6738	Telephone 6-7221	MAdison 8644

The best equipped telephone directory publishing organization in the world

everybody . . .

There's more to the "1500" series of modern telephones than the family-wide distinction of good looks. There's welcome variety, too. Your every subscriber need can be met with perfection of performance—plus eye-pleasing appearance which any user will approve. *Standardize* on Stromberg-Carlson's "1500's"—as hundreds of independents have done.

No. 1573 ***two-line telephone, providing Call and Hold on two lines to a central office.***

No. 1575 ***multi-line telephone, with 6 buttons usable as Line, Hold, Signal or Intercom.***

Be Sure Your Exchange is Ready

FOR TELEPHONY'S NEW ERA OF SERVIC

—NATIONWIDE TOLL DIALIN

with FEDERAL 2-5 DIGIT ABSORBING SWITCH

for Any Step-by-Step Dial Switching System

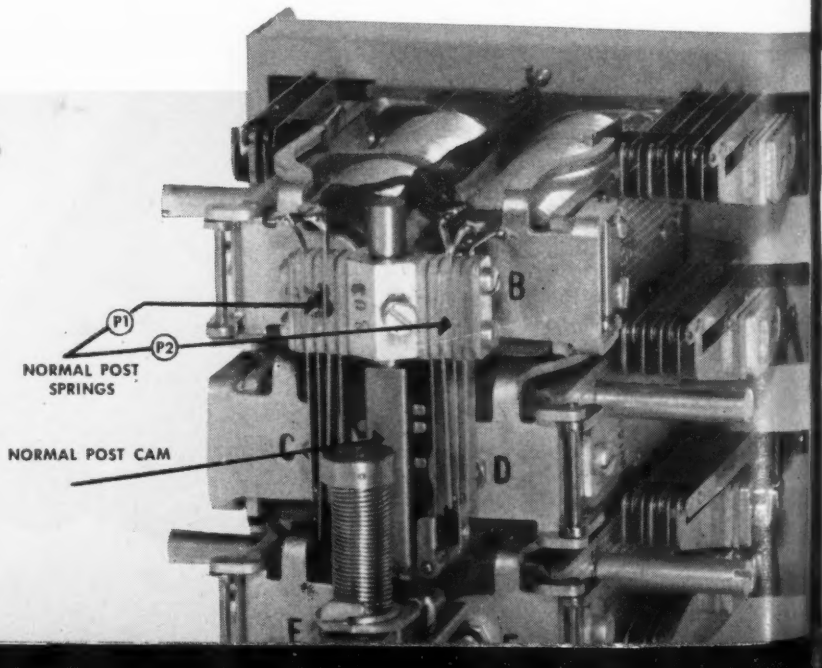
Quickly Converts Your Present System—Federal 2-5 Digit Absorbing Switches are easily installed as replacements for the first selectors in your present Step-by-Step System. No new wiring is needed for other switches, banks or shelves. Your change-over to flawless 2-5 dialing service is achieved quickly, economically.

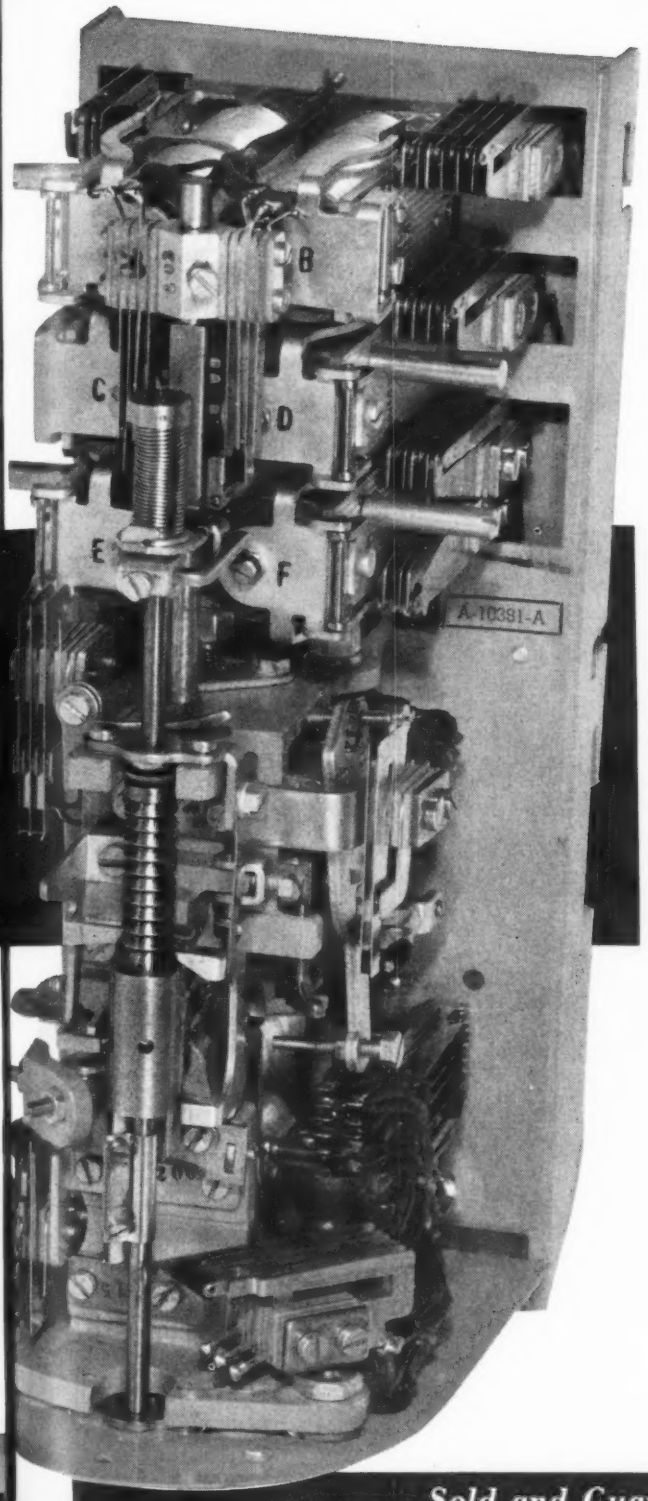
Optional On New Equipment—Be certain that you specify Federal 2-5 Digit Absorbing Switches as part of any new Federal Step-by-Step equipment you order in the future. You get every advantage of Step-by-Step well-established performance features—long-life, low cost of operation, ease of maintenance, simplicity of equipment and circuits, and in addition, will have taken the first necessary steps toward customer toll dialing.

FEDERAL'S 2-5 SELECTOR CAN BE ADAPTED TO MEET ANY NUMBERING PLAN

Simple Normal Post Cam and Spring Adjustments will provide the following features:

1. To absorb repeatedly until level to be absorbed once is dialed: *Adjust only PS1 to operate*
2. To absorb one time only and unlock all levels: *Adjust both PS1 and PS2 to operate*
3. To rotate wipers to 11th contact (busy) unless a level absorbing once has been dialed: *Adjust only PS2*
4. For free level normal hunting operation 1st digit: *Adjust neither PS1 or PS2*





Telephone men confirm this fact:

Nationwide toll dialing is coming . . . *fast!* Be sure your exchange is ready. The Federal 2-5 Switch makes it possible to convert any Step-by-Step System —quickly and economically—to the national numbering plan. Because it is a superior drop-back selector, built to rigid performance standards, the Federal 2-5 Switch will meet your complete requirements—whether you decide to use 2-5 numbering on toll alone, or for both toll and local calls. Prepare for your part in telephony's new era of service—by converting with Federal 2-5 Digit Absorbing Switches. Take a few minutes to write for complete information today . . . you'll find your time has been well spent!

Sold and Guaranteed by

KELLOGG DIVISION OF IT&T

KELLOGG SWITCHBOARD AND SUPPLY COMPANY
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Your nearest Kellogg shipping point is never far away — KELLOGG'S six conveniently located warehouses and more than 100 supplier distribution points throughout the country assure you fast, economical delivery of guaranteed line supplies.

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Sealed Against Trouble!—Communication ally ment manufacturers demand Kester ersibl Rosin-Core Solder, because it makes a cept seal. Prevents high-resistance joints and ade mittent open-and-closed circuits. Avoid ersi —use KESTER SOLDER COMPANY om

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Save Three Ways . . . on materials, man ds t and maintenance with INDIANA STE idex WIRE CO.'S Crapo HTL-85 and H eeps Line Wire. Galvanized by the famous ariou Galvanizing Process, it is protected chin heavy, ductile, tightly-adherent coating ade

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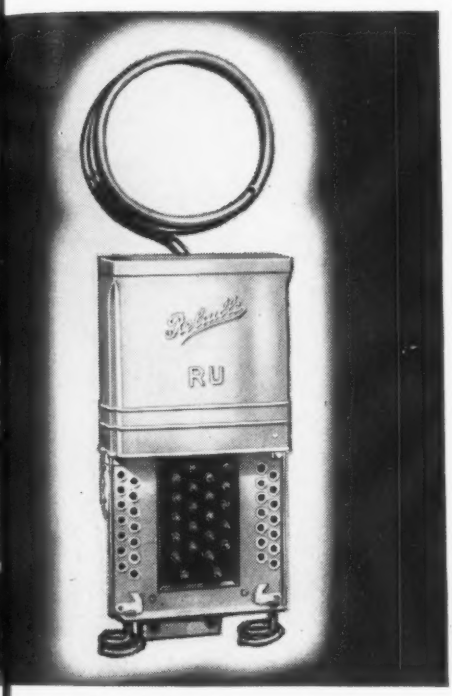
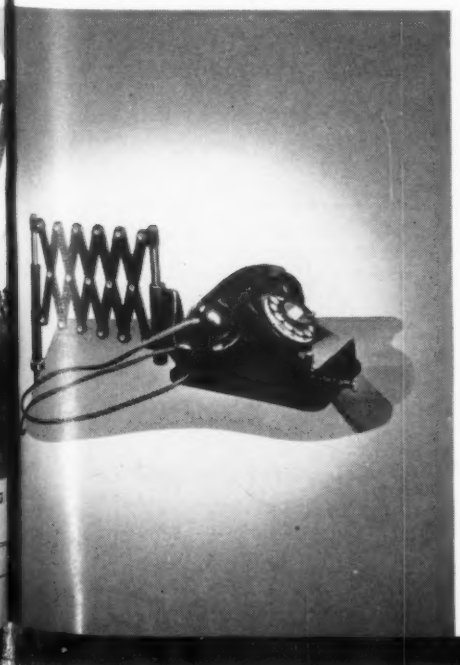
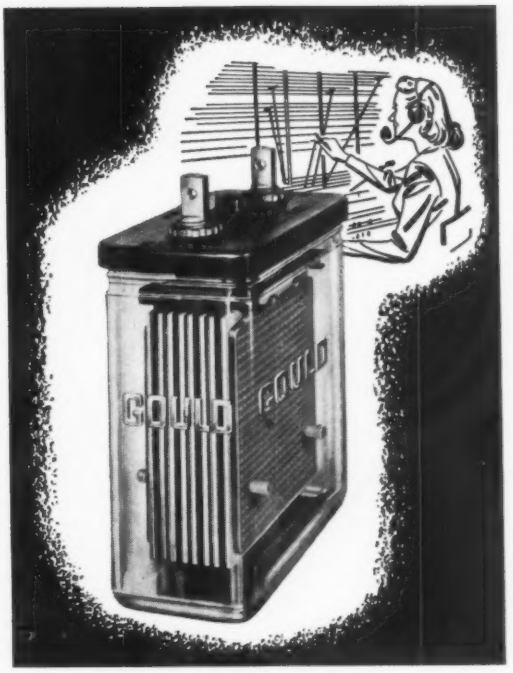


ally Weatherproof! The Reliable "RU" Re-ersible-type Cable Terminal has earned wide ceptance throughout the telephone field. ade by RELIABLE ELECTRIC CO., its ersible sliding cover protects connections om weather and simplifies installation.

•

ds to the Convenience of Your Telephone—The idex Telephone Bracket saves desk space—eps phone in easy reach yet out of way. rious types of mountings available for at-hing to wall, side of desk, and table edges. ade by GLIDEX CORPORATION.

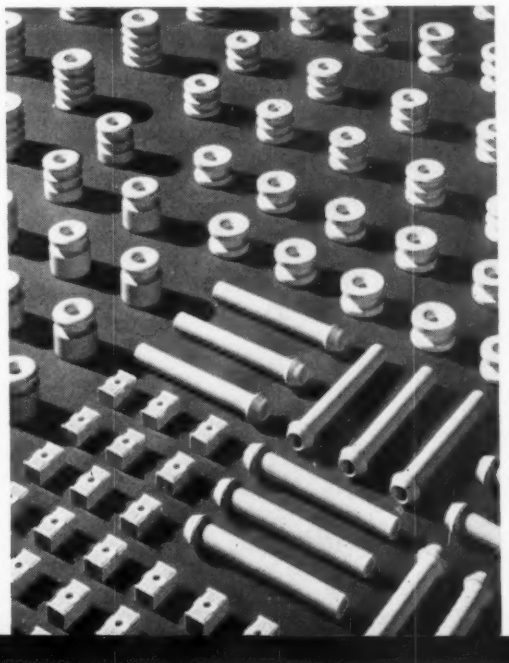




Outstanding Battery Performance is yours when you choose Gould Planté Batteries. Thick, grooved pure lead positive plates give many years of trouble-free service! Made by GOULD-NATIONAL BATTERIES, INC., a leader in their field. They're the finest money can buy.

•

Uniform High Quality is the distinctive characteristic of all PORCELAIN PRODUCTS, INC., Knobs and Tubes . . . all especially produced to exacting specifications and made to guarantee top quality in insulation and top performance for telephone installation.



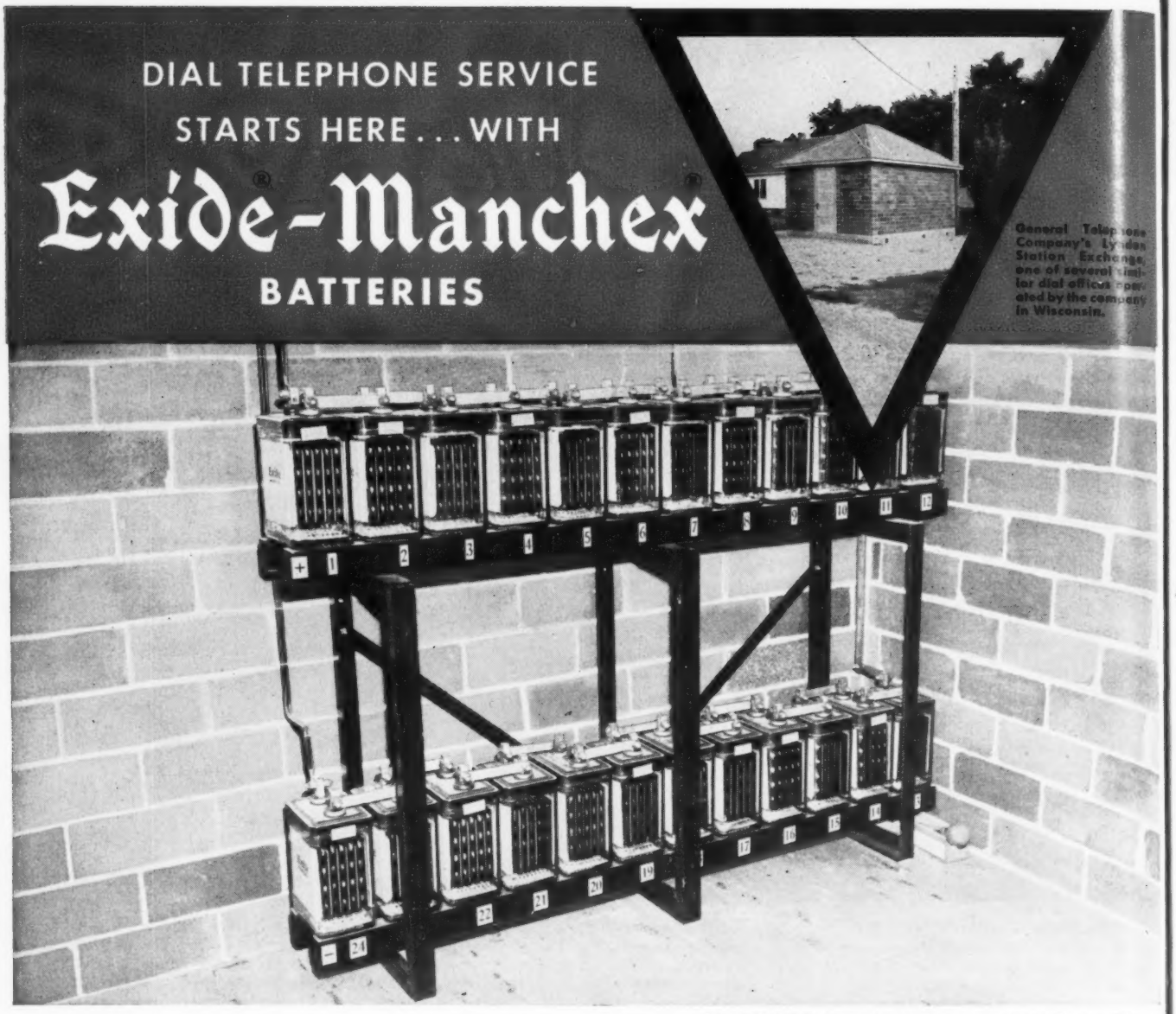
Power Cross Protection is now "ganged up" with the new Cook 5 Circuit Power Cross Protector. It provides a single assembly for 5 circuits to be mounted on a 10-pin arm requiring only a single ground wire. Easy to install. Made by COOK ELECTRIC COMPANY.

•

Disc Records have proved most practical medium for recording messages on telephone answering instruments. Peatrophone "the mechanical secretary" records talk-out and incoming messages permanently for re-use or reference. Discs may be kept in letter file.

DIAL TELEPHONE SERVICE
STARTS HERE . . . WITH

Exide®-Manchex®
BATTERIES



General Telephone Company's Lyndon Station Exchange, one of several similar dial offices operated by the company in Wisconsin.

24-cell DME-11 Exide-Manchex batteries at the Lyndon Station office.

. . . AT THE LYNDON STATION EXCHANGE OF THE GENERAL TELEPHONE COMPANY of Wisconsin. The Lyndon Station Exchange is a typical community dial office serving part of our country's 50,000,000 telephones. At Twin Lakes, Land O'Lakes, Trevor and other places are similar design exchanges . . . with installations of 100 to 500 lines.

The dial equipment at Lyndon Station is operated by a bank of 24-cell DME-11 Exide-Manchex batteries.

Many telephone companies from coast to coast rely on Exide-Manchex batteries for all telephone applications. Long-lasting Exide-Manchex offers:

POSITIVE OPERATION: Dependable performance for all telephone battery requirements—central office and private exchange equipment.

ADEQUATE RESERVE POWER for emergencies beyond normal needs.

LOW MAINTENANCE COSTS: Water required about twice a year. No change of chemical solution needed during life of battery.

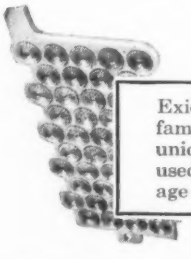
LOW DEPRECIATION: Sturdy, long-life construction which includes the exclusive manchester positive plate.

GREATER CAPACITY in a given amount of space avoids overcrowding of equipment.

• • •

Various sizes and types of Exide Batteries are available in plastic containers.

Exide-Manchex is your best battery buy for all telephone services



Exide-Manchex batteries are different. Their famous Exide manchester positive plates are unique in design and construction, and are used *exclusively* in this outstanding storage battery.

1888 . . . DEPENDABLE BATTERIES FOR 66 YEARS . . . 1954

Exide INDUSTRIAL DIVISION, The Electric Storage Battery Company, Philadelphia 2, Pa.

More jobs per day

Service-Utility body lockers are triple-sealed against dirt and moisture. Doors are fitted with recessed handles, slam-action catches, and keyed-alike cylindrical locks for full protection. Ladder racks, vise brackets, and pipe supports are also available, providing everything needed for every type of work.

When you put INTERNATIONAL Trucks with Service-Utility bodies into operation in installation or service call work, you get more work done per day.

The Service-Utility body provides all-steel lockers, with compartments of varying sizes, for orderly storage of all the tools, parts, and equipment needed to do a number of different jobs. Thus, there is no costly labor-time wasted in job-to-shop trips for needed or forgetten items.

And INTERNATIONAL Truck quality further lowers your operating costs. Famous INTERNATIONAL engines assure top performance with maximum economy. INTERNATIONAL Tough-Job engineering and all-truck design mean utmost dependability, long life, and lowest maintenance expense.

INTERNATIONAL Trucks with Service-Utility bodies are available in nine models, with 77-inch body lengths for 115-inch wheelbases, 89-inch lengths for 127-inch wheelbases and 96-inch lengths for 134-inch wheelbases. GVW ratings, 4,200 to 8,600 lbs.

Ask your INTERNATIONAL Dealer or Branch for complete details on these time-saving, money-saving workshop trucks. Time payments arranged.

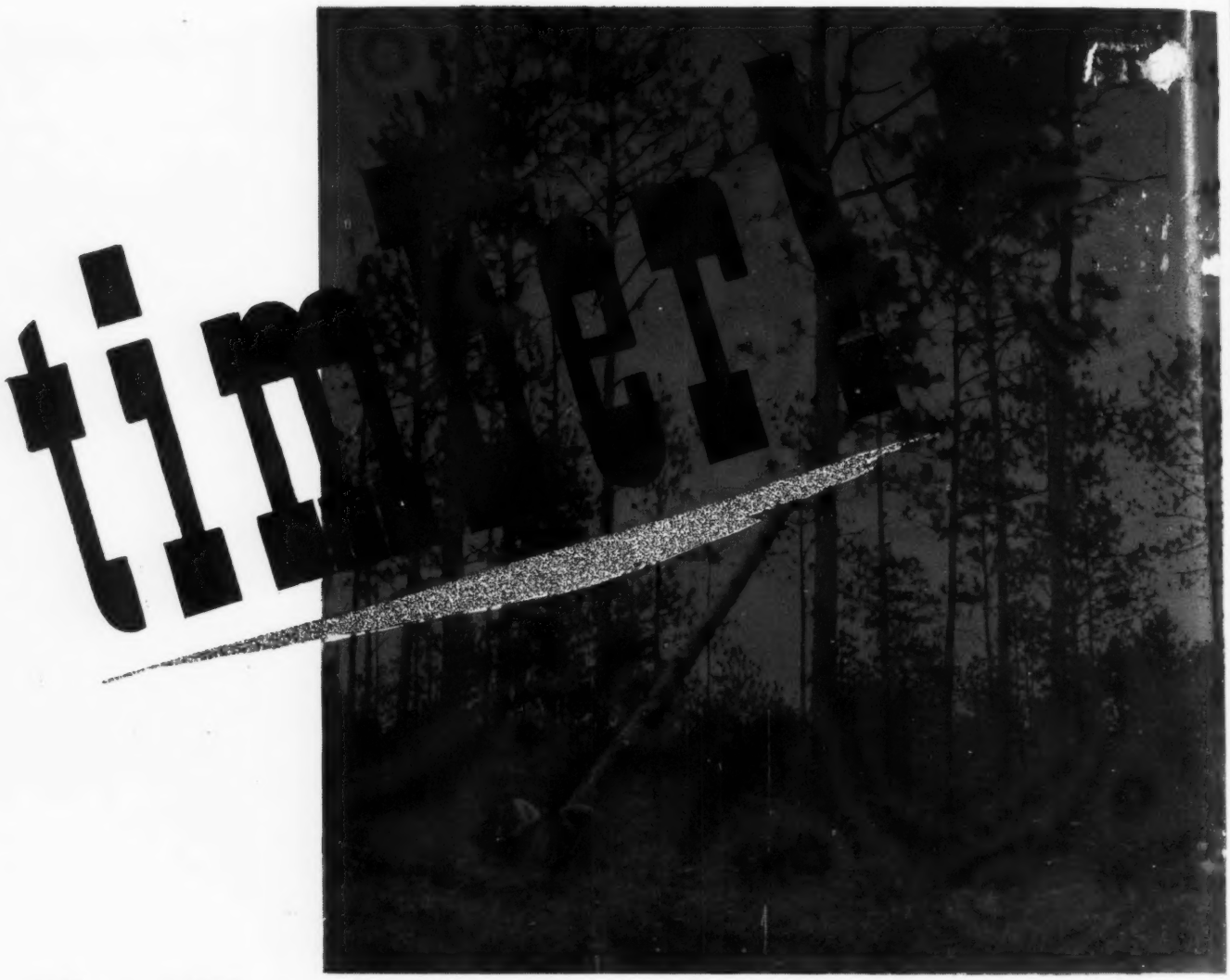
INTERNATIONAL HARVESTER COMPANY • CHICAGO

International Harvester Builds **McCORMICK**® Farm Equipment and **FARMALL**® Tractors . . . Motor Trucks . . . Industrial Power . . . Refrigerators and Freezers

Better roads mean a better America

INTERNATIONAL® TRUCKS

"Standard of the Highway"



for Republic Pressure Creosoted

TELEPHONE POLES... RAILROAD TIES... WOOD BLOCKS
LUMBER... CROSS ARMS... PILES... ANCHOR LOGS

Timber that becomes Republic Pressure Creosoted Wood becomes timber with a long, useful life. Varied are the uses for Republic Pressure Creosoted Wood . . . it can be counted on for years and years.

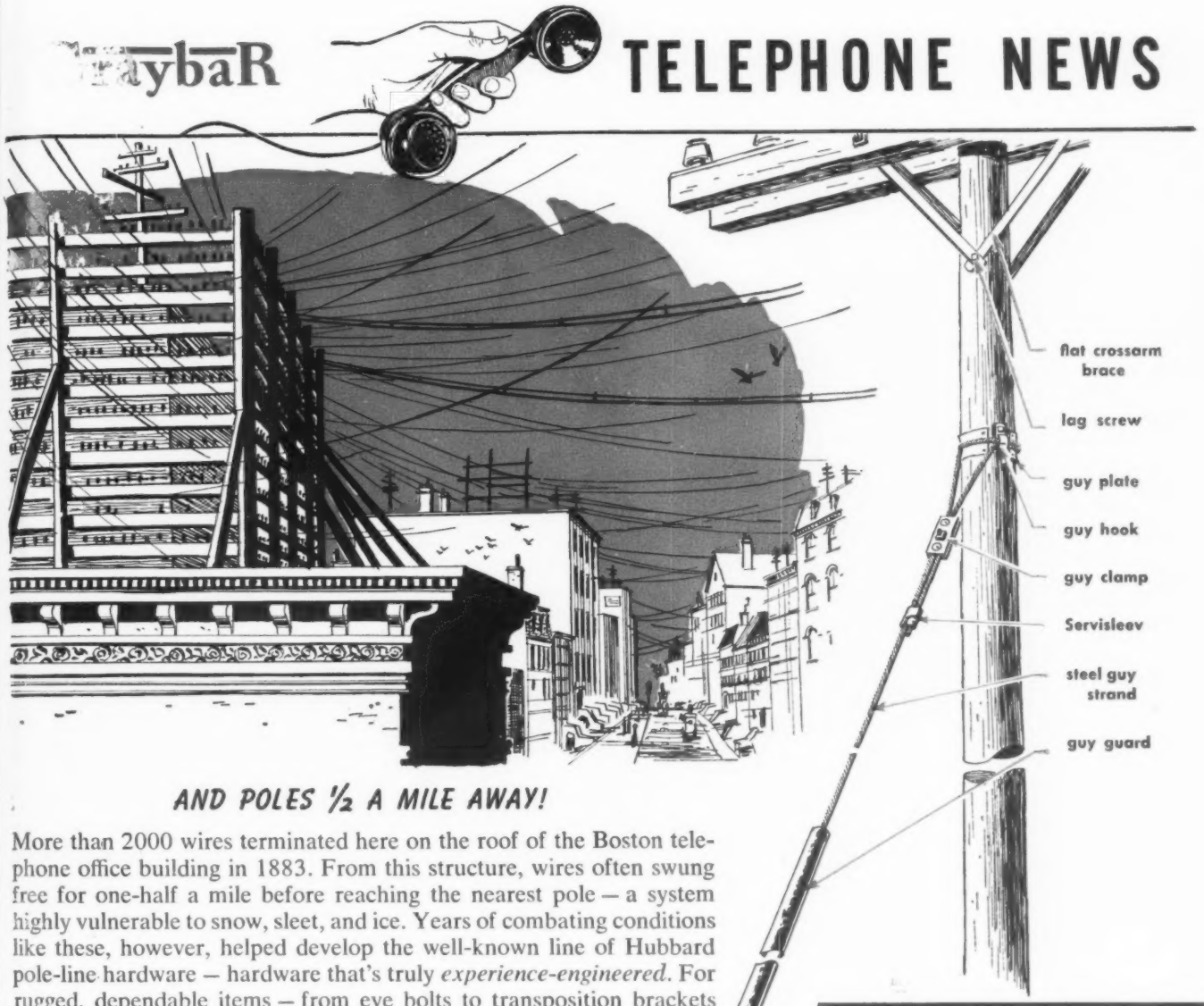
It is smart to order Pressure Creosoted Wood products from Republic . . . made from selected trees . . . made resistant to attack from insects and fungi.

Republic
CREOSOTED PRODUCTS

REPUBLIC CREOSOTING COMPANY
MERCHANTS BANK BUILDING, INDIANAPOLIS 4, INDIANA

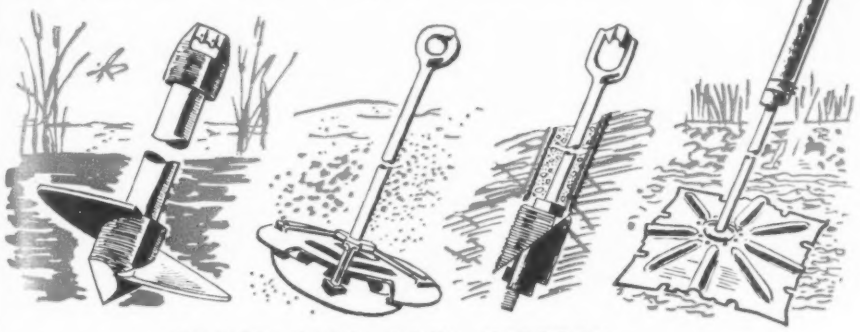
GraybaR

TELEPHONE NEWS



AND POLES ½ A MILE AWAY!

More than 2000 wires terminated here on the roof of the Boston telephone office building in 1883. From this structure, wires often swung free for one-half a mile before reaching the nearest pole – a system highly vulnerable to snow, sleet, and ice. Years of combating conditions like these, however, helped develop the well-known line of Hubbard pole-line hardware – hardware that's truly *experience-engineered*. For rugged, dependable items – from eye bolts to transposition brackets – Graybar reminds you to "hang the load on Hubbard."



SWAMP, SAND, ROCK, HARDPAN— WHAT'S THE PROBLEM IN YOUR AREA?

It really makes little difference – there's an anchor designed to do a quick, sure holding job in any soil classification. And . . . you can get the type best suited to your own local needs from one of 109 strategically located Graybar offices and warehouses across the nation.

WITH JUST ONE ORDER— THE REST OF YOUR NEEDS!

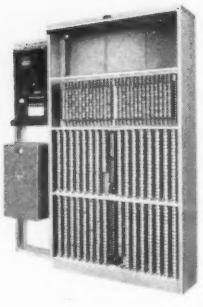
These are just a few of the thousands of telephone items available from Graybar. A pioneer supplier of equipment to the independent telephone industry, Graybar offers prompt service on everything from the bottom of the hole to the top of the pole.

Your local Graybar Representative is anxious to make your order his personal responsibility – be sure to make your next order read "Via Graybar."

350-236

Call Graybar first for... Everything in Telephone Supplies

GRAYBAR ELECTRIC CO., INC.
Executive Offices:
Graybar Building, New York 17, N. Y.
IN OVER 100 PRINCIPAL CITIES

An idea...  that is still growing!

1948 1949 1950

LEICH DIAL SWITCHBOARDS ARE INSTALLED OR ARE BEING BUILT FOR THE FOLLOWING EXCHANGES:

ALABAMA
Goshen
Lapine
Pine Level
Ramer
Thorsby

ARIZONA
Chinle
Ganado
Keams Canyon
Tuba City

ARKANSAS
Lake City

COLORADO
Blanca

FLORIDA
Crawfordville
Greenville

GEORGIA
Broxton
Coolidge

IDAHO
Potlatch
Priest River
St. Maries

ILLINOIS
Argenta
Armington
Atlanta
Ava
Biggsville
Brimfield
Brookville
Buckley
Buda
Cabery
Camp Grove
Campus
Carrier Mills
Castleton
Cedarville
Chadwick
Chatham
Cherry Valley
Cisco
Clay City
Coleta
Compton
Coulterville
Creal Springs
De Soto
Edelstein
Elkhart
Elkville-Dowell
Ellis Grove
Elwin
Emmington
Ewing
Goreville
Henning
Joy
Kirkwood
La Place
La Rose

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Loda
Loraine
Magnolia
Marissa
Mendon
Meyer
Milton
Neponset
New Douglas
New Holland
Palmyra
Pawnee
Perry
Pleasant Hill
Roscoe
Rose Hill
Saybrook
Sheridan
Sidney
Somonauk
Stillman Valley
Stonefort
Thompsonville
Tilden
Ursa
Warrensburg
Wayne City
Willow Hill
Winnebago
Wonder Lake
Woodlawn
Yale
*Galesburg (4)
*Herrin
*Lincoln
*Mendota
*Ordill
*Robinson

INDIANA
Akron
Brownsville
Burket
Crothersville
Dunlap
Fritchton
Frankton
Galveston
Hamilton
Hanna
Hanover
Kouts
La Crosse
Laketon
Mays
Mechanicsburg
Medora
Millhousen
North Madison
Perkinsville
Pleasant Lake
Raleigh
St. Joe
Spurgeon
Vallonia
Wheatland
Young America
*Connersville—(2)
*Lafayette—(3)
*Logansport
*La Porte
*Valparaiso

IOWA
Argyle
Atkins
Batavia
Bayard
Bennett
Denmark
Emeline-Iron Hill
Hartwick
Hillsboro
Ionia
Le Clair
Lisbon
Lowden
Marble Rock
Montrose
Oxford Junction
Primrose
Ventura

KANSAS
Dexter
Tribune

KENTUCKY
Bryantsville
Dover
Fernleaf
Grayson
Lewisburg
Liberty
Mays Lick
Olive Hill
Owingsville
Pine Knot
Sharpsburg
Washington
Wilmore
*Lexington—(2)

LOUISIANA
Belcher
Gilliam
Hosston
Ida

MICHIGAN
Avoca
Bath
Burr Oak
Laingsburg
New Lothrop
Rankin
Smiths Creek
Twin Lake
White Pine
*Erie
*Harbor Beach
*Milford
*Muskegon—(3)
*Muskegon Hts.
*Sturgis
*White Pine

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Alvarado
Argyle
Big Falls
Clarks Grove
Foreston
Gilman
Glyndon
Herman
Kandiyohi

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Lerdal
Little Fork
Ramey
Rice
Stephen
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Holland

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Frazer
Larslan
Mouat
Outlook
North Brockton
North of Glasgow
North Hinsdale
North Nashua
Peerless
Reserve
Southeast Lustre
South Flaxville
South Glentana
Westby
West Scobey

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Alamo
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Fortuna
Marmon
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Tower
Wildrose

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Beaver
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Glouster
Hanoverton
Harpersfield
Harpster
Holgate
Homeworth
Idaho
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Johnsville
Laura
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Mason
North Benton
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Paris
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Racine
Rawson
Resaca
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Shreve
Smithville
Stryker
Warsaw
Waterville
Waynesfield
Westminster
Wharton
Winona
Woodstock
*Apple Creek
*Bellefontaine
*Bettsville
*Bryan
*Bucyrus—(3)
*Lima—(11)
*Marion—(6)
*Mt. Vernon
*Ottawa
*Shelby—(2)
*Vanwert
*Wooster

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Charlotte
Claude
Dodson
Earth
Elbert
Eliasville
Estelline
Friona
Gregory
Groom
Happy
Hurlwood
Jourdanton
Knox City
Louise
Loving
Lyford
Meadow
Miami
Mobeetie
Mont Belview
Morton
Nixon
Orange Grove
Petersburg
Portland
Roma
Ropesville
Rosharon
Seadrift
Shallowater
Shepherd
Smiley
Smyer
South Olney
Stafford
Sudan
Wheeler
Whiteface
Woodson
*Seadrift

UTAH
Castle Dale
Cleveland
Emery
Ferron

VIRGINIA
Rustburg

WASHINGTON
Chewelah
Farmington
Granite Falls
Hunters
Kettle Falls
Medical Lake
Palouse
Reardon
Rosalia
Valley
*Medical Lake

WISCONSIN
Barnes
Belgium
Bonduel
Brooks
Brule
Cable
Campbellsport
Cascade
Crivitz
Dalton
Dane
Endeavor
Fifield
Fox Creek
Goodman
Grandview
Herbster
Holman
Jim Falls
Kingston
Lac Du Flambeau
Lake Namekagon
Larsen
Lyndon Station
Marengo
Mason
Mishicot
North Prairie
Oxford
Pembine
Pickett
Port Wing
Reedsville
Saukville
Sayner
Tripp
Twin Lakes
Waino Oulu
Wausaukee
Whitelaw

WYOMING
Freedom
La Grange
Lingle

* — *PABX*

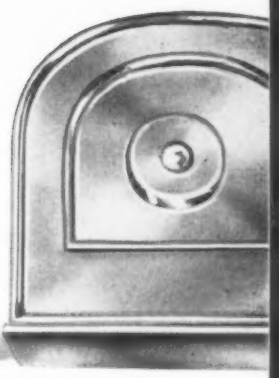
LEIC

When the Leich Dial System was first announced on September 28, 1947, it presented a new idea in dial switching equipment. The idea was basically to **"uncomplicate"** dial switching. For this dial switchboard was easier to understand and maintain, less costly to install. With it, additions could be made by simply jacking in extra equipment.

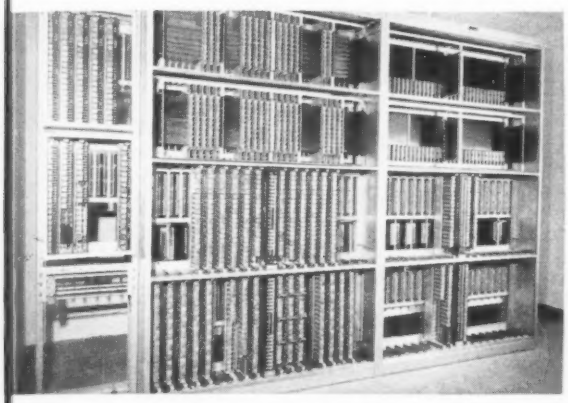
Today, almost 450 Leich Dial Systems are installed or being built. The basic idea is still part of every Leich Dial System. Many improvements have been, and still are being made.

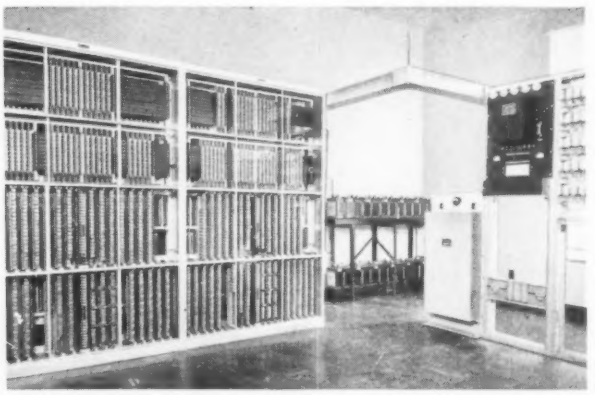
But the big idea — to make a better, faster, easier way to convert to dial — is the main reason why the Leich Dial System has been so enthusiastically received.

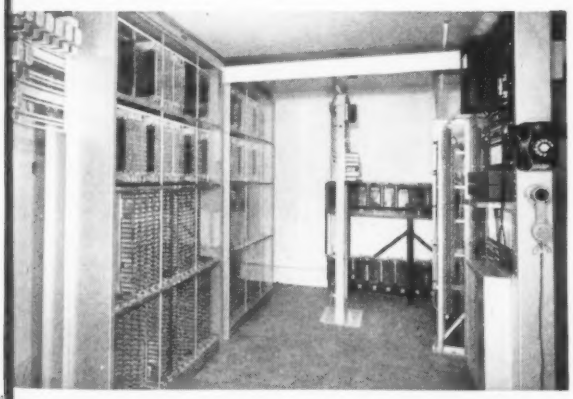
If you're considering a dial conversion, it will pay to find out about the Leich Dial System.

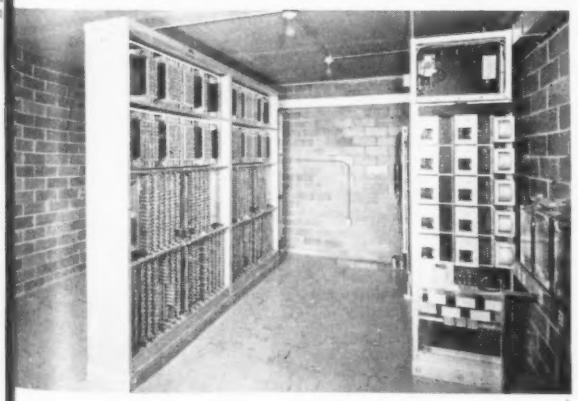


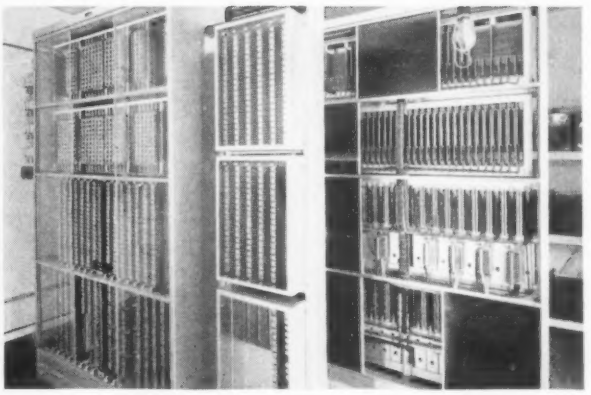
1952 1953 1954











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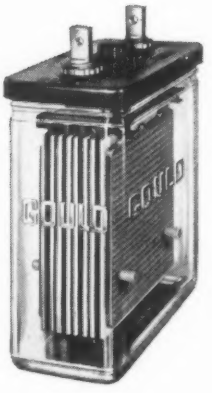

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